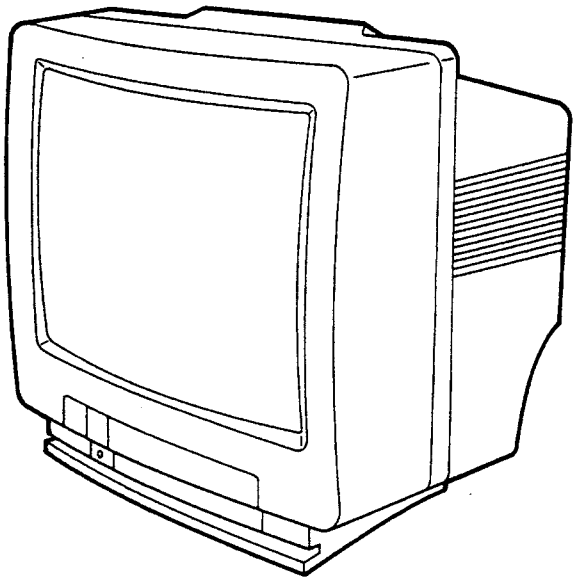
MITSUBISHI

Service Manual

COLOUR TV



MODEL

CT-21M2EPM
CT-25M2EPM

MC-Service

MITSUBISHI ELECTRIC CORPORATION

SPECIFICATION

Reception System	:	CCIR-B/G
Colour System	:	PAL, 60PAL
Channels		
VHF	:	44~68, 104~300MHz
UHF	:	470~862MHz
Mains Input	:	AC230V;50Hz
Power Consumption	:	71W (21" model) 86W (25" model)
Aerial Input	:	75Ω unbalanced
Intermediate Frequency	:	Video 38.9MHz Sound 33.4MHz
Audio Output	:	5W
Speaker	:	120mm round 1pc.
Chassis	:	EURO-14 chassis
Picture Tube	:	A51EBV13X01 90° Deflection (21" model) A59EAK71X11 110° Deflection (25" model)
Cabinet Dimensions	:	497 (W) × 447.5 (H) × 486mm (D) (21" model) 572 (W) × 504 (H) × 447.5mm (D) (25" model)
Weight (Approx.)	:	21.2kg (21" model) 25.3kg (25" model)

SAFETY PRECAUTIONS

NOTICE : Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

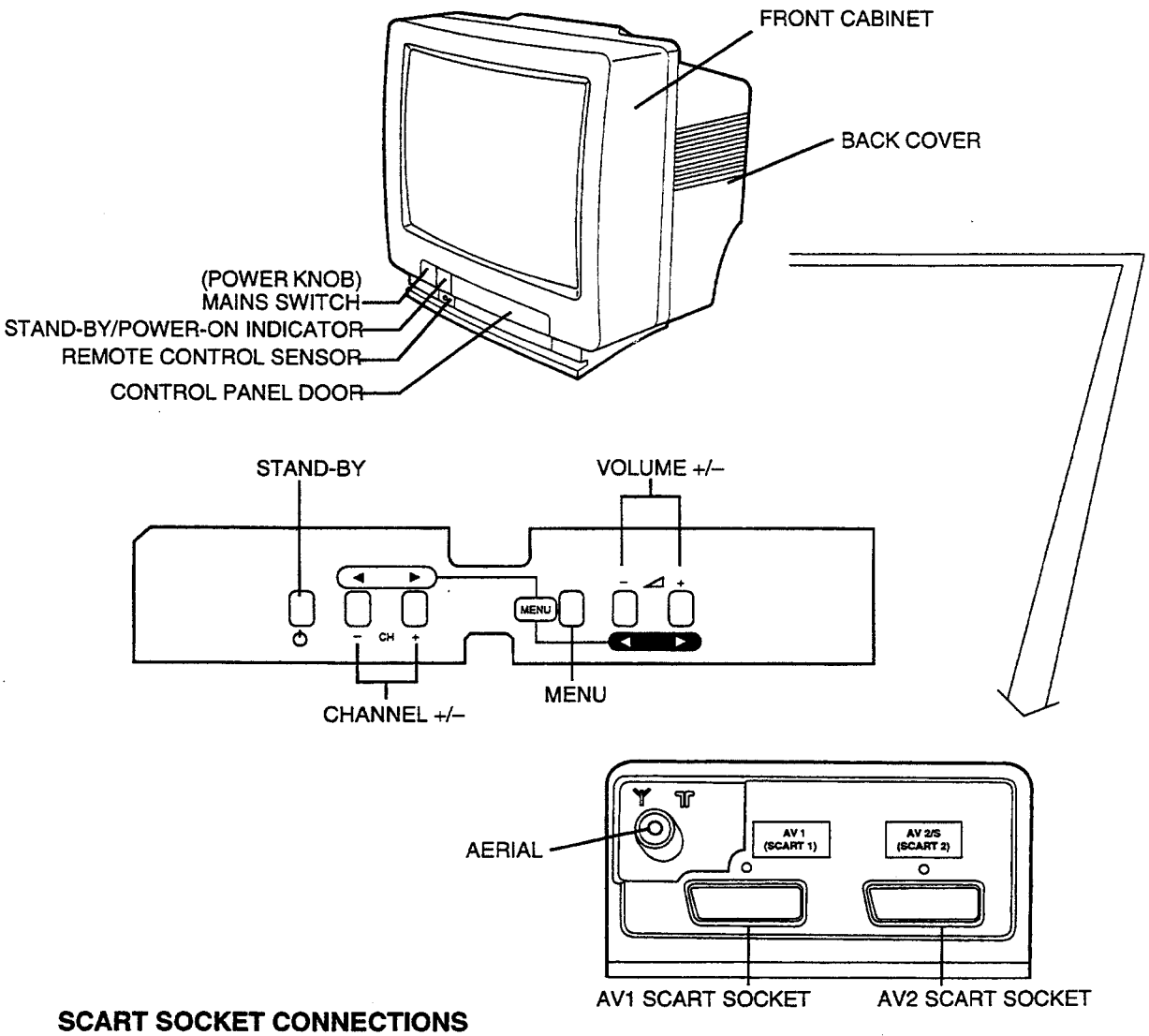
WARNING

1. An isolation transformer should be used between the television receiver and the AC supply point before any test/service is performed on a LIVE chassis television receiver.
2. Operation of these receivers outside the cabinet or with the cover removed, involves a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not throughly familiar with precautions necessary when working on high voltage equipment.
3. Do not install, remove or handle the picture tube in any manner unless shatter – proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
4. When service is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area. Where a short – circuit has occurred, replace those components that indicate evidence of overheating.

LEAKAGE CURRENT COLD CHECK

Before returning the receiver to the customer, it is recommended that the leakage current be measured according to the following methods.

With the AC plug removed from the AC source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an 500V D.C. Insulation Tester, connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 4 meg ohm. Any resistance below this value indicates an abnormality which requires corrective action.



SCART SOCKET CONNECTIONS

PIN	AV1	AV2	PIN	AV1	AV2
1	AUDIO OUT (MONO)		12	NOT CONNECTED	
2	AUDIO IN R		13	RED EARTH	NOT CONNECTED
3	AUDIO OUT (MONO)		14	BLANKING EARTH	NOT CONNECTED
4	AUDIO EARTH		15	RED IN	CHROMA IN
5	BLUE EARTH	NOT CONNECTED	16	BLANKING	NOT CONNECTED
6	AUDIO IN L		17	VIDEO OUT EARTH	
7	BLUE IN	NOT CONNECTED	18	VIDEO IN EARTH	
8	FUNCTION SWITCH		19	VIDEO OUT	
9	GREEN EARTH	NOT CONNECTED	20	VIDEO IN	VIDEO IN or LUMINANCE IN
10	NOT CONNECTED				
11	GREEN IN	NOT CONNECTED	21	SOCKET EARTH	

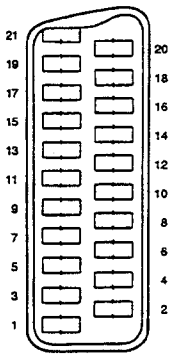


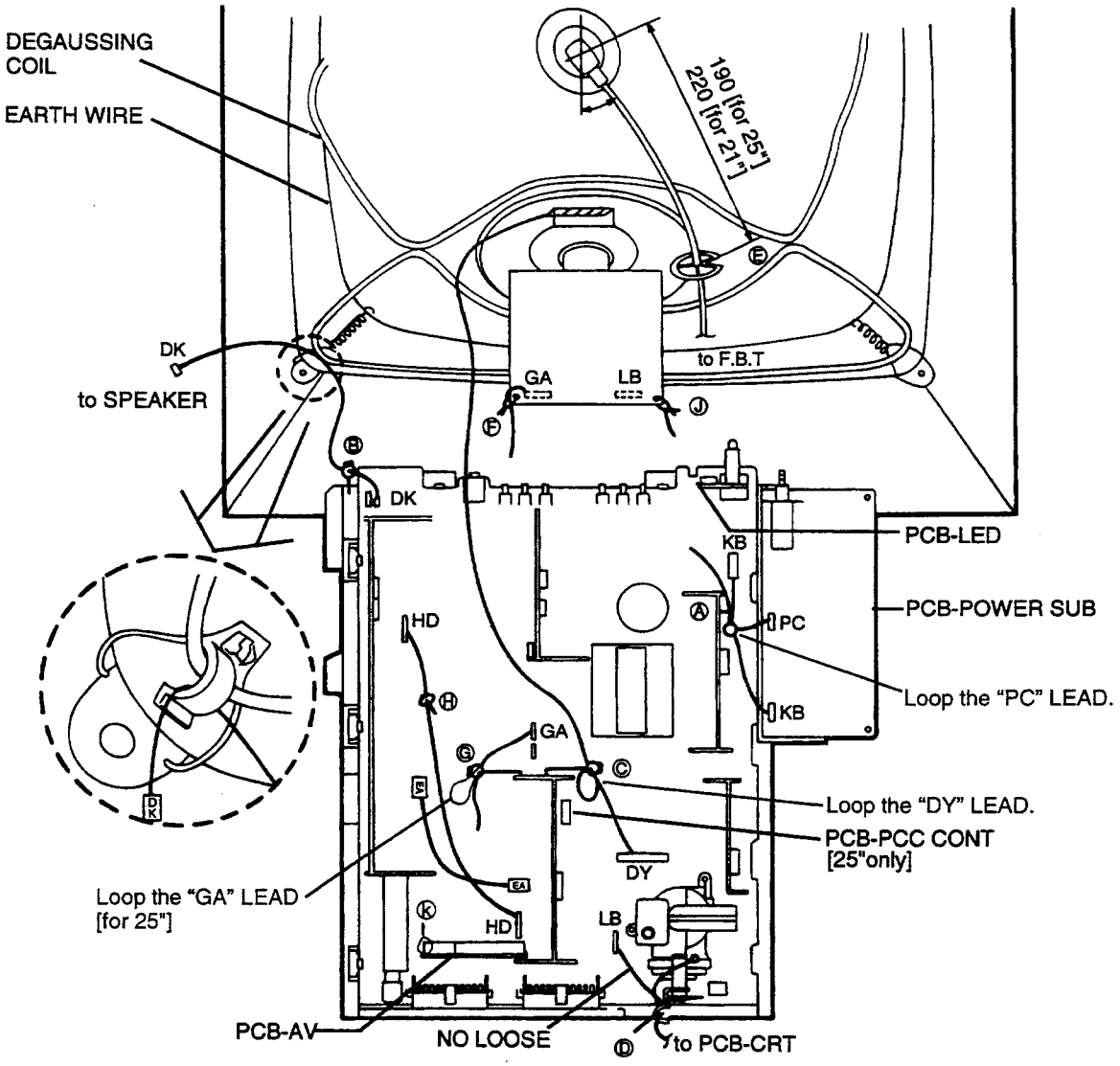
Fig. 1 Controls and Cabinet Parts

LEAD DRESSING

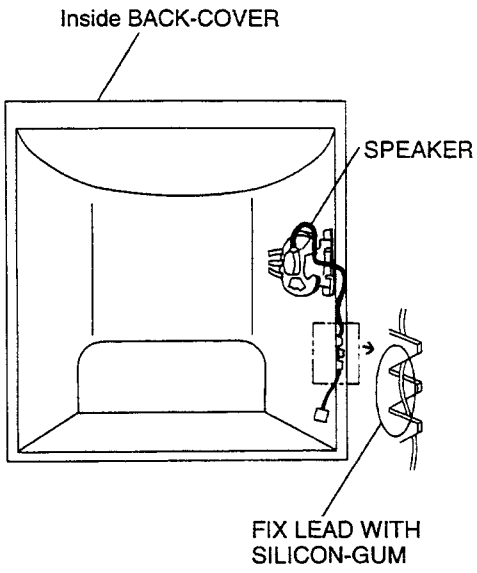
The lead wires clamped are listed in the table below.

Note: The inner wires are clamped so that they do not come close to the heat generating or high-tension parts. After servicing route all wires in their original position.

The anode lead wires are routed so no tensile strength is applied to the anode cap. If the mounting angle of the anode cap and the route of the anode lead wires are changed. Return them to the initial angle and route.



MARK	LEADS TO BE CLAMPED	MARK	LEADS TO BE CLAMPED
A	KB, PC	F	SA (2LAYER CLAMP), GA
B	DK	G	GA
C	DY	H	HD
D	LB, FOCUS-LEAD, SCREEN-LEAD	J	LB, FOCUS-LEAD, SCREEN-LEAD
E	ANODE-LEAD		



SPEAKER	LEAD-COLOUR
SP391 +	RED
SP391 −	WHITE

Removing the Back Cover

1. Remove 6 screws of the Back cover. (see Fig. 2)
2. Push up 2 hooks (ⓐ and ⓑ) at the top of Back cover to remove them. (see Fig. 2)

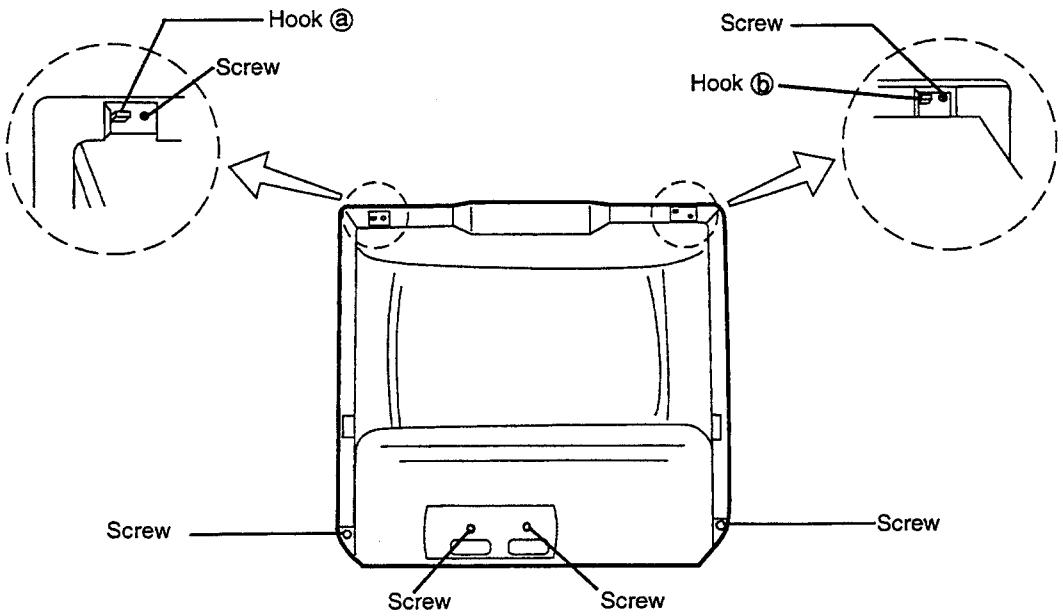


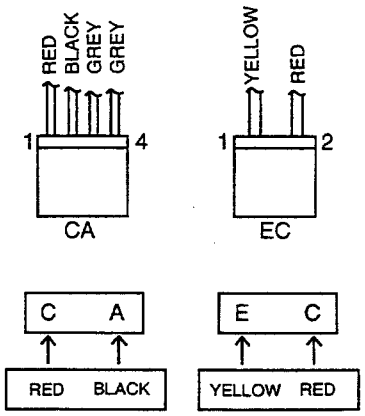
Fig. 2

LEAD CONNECTOR COLOUR CODE

Lead connectors show the connector names by colour codes of leads, not printed any connector names.
When connecting or removing them, identify connector names according to colour codes in the table below.
Colour Codes (See Pin Nos. 1 and 2 of connectors)

Colour	Code
BLACK	A
BROWN	B
RED	C
ORANGE	D
YELLOW	E
GREEN	NOT USED (GROUND)
BLUE	G
VIOLET	H
GREY	J
WHITE	K
PINK	L

Example:



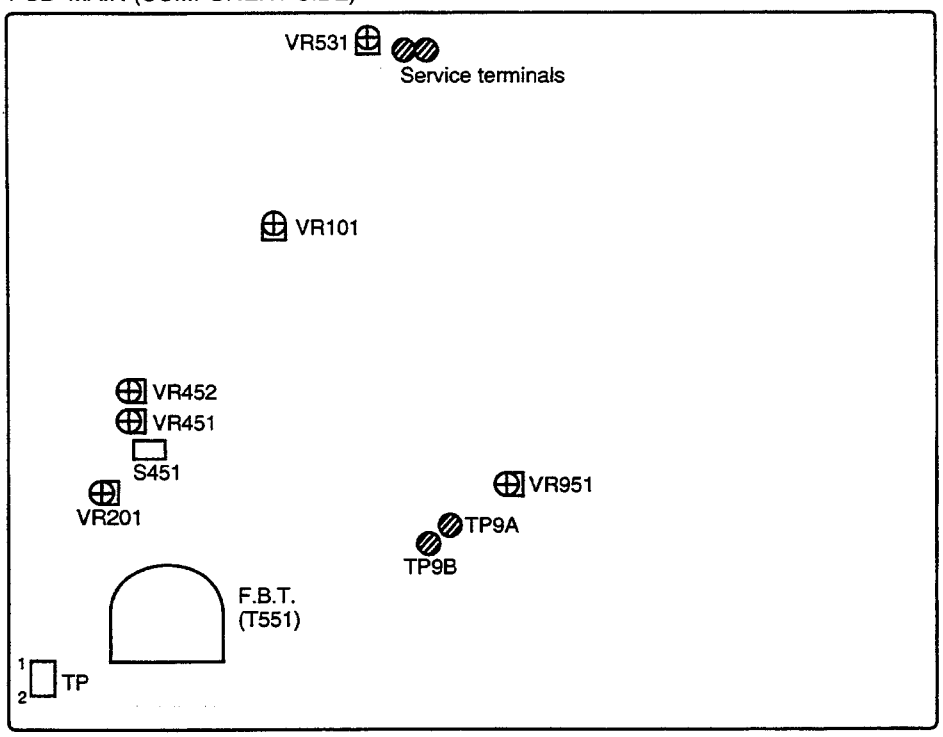
WHEN SERVICING PCB USE THE EXTENSION CORD

PRINTED CIRCUIT BOARD	CONNECTOR	PARTS NO.
AV PCC-CONT (only 25")	CA (15 pin) LA (5 pin)	859C431O30
AV LED	CB (6 pin) HC (3 pin)	859C431O60

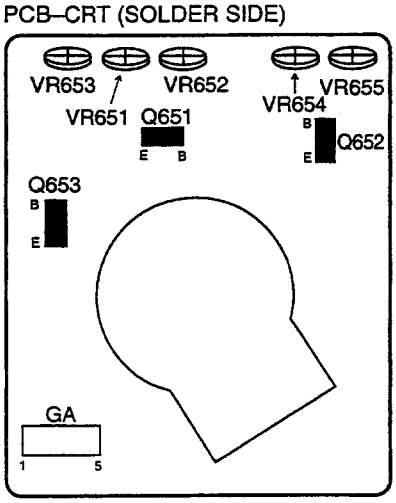
ELECTRICAL ADJUSTMENT

LOCATION OF TESTPOINTS AND ADJUSTMENTS

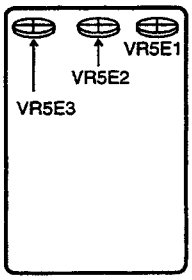
PCB–MAIN (COMPONENT SIDE)



PCB–CRT (SOLDER SIDE)



PCB–PCC CONT
(COMPONENT SIDE)



[VIF circuit]
1. RF AGC

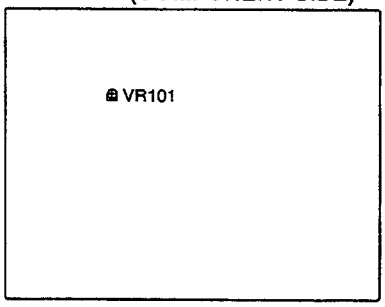
Adjustment purpose The best receiving condition of RF signal.

Symptom when incorrectly adjusted Poor S/N ratio or cross modulation.

Measuring instrument	---
Test point	---
EXT trigger	---
Measurement range	---
Input signal	RF signal (Programme)
Input terminal	RF IN terminal

1. Supply an RF signal(Programme).
2. Turn on AFT.
3. Adjust VR101 so that the picture and sound have no best, noise and inter-modulation distortion.

PCB–MAIN (COMPONENT SIDE)



[Power circuit]
2. B4 Voltage

Adjustment purpose The best value of power supply voltage for horizontal deflection circuit.

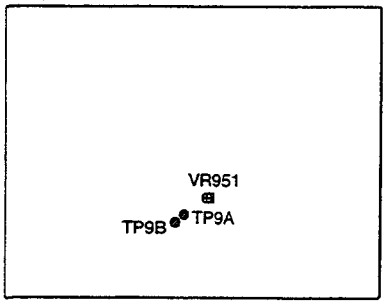
Symptom when incorrectly adjusted Too bright or too dark picture. Too compressed or too expanded horizontal width of picture.

Measuring instrument	DC Voltmeter
Test point	+ lead : TP9A – lead : TP9B
EXT trigger	---
Measurement range	---
Input signal	RF signal (Programme)
Input terminal	RF IN terminal

1. Supply an RF signal (Programme).
2. Observe the voltage at TP9A and TP9B (Plus lead to TP9A).
3. Adjust VR951 so that the voltage is a value listed in the table below.

	21 inch	25 inch
Voltage Value	122 ± 3V	145 ± 1V

PCB–MAIN (COMPONENT SIDE)



[CRT circuit] 3. Cut Off, White	**Adjustment purpose**	Rate of electron beam shot from each electron gun of R, G and B.
	Symptom when incorrectly adjusted	Coloured monochrome, too dark or too bright picture.

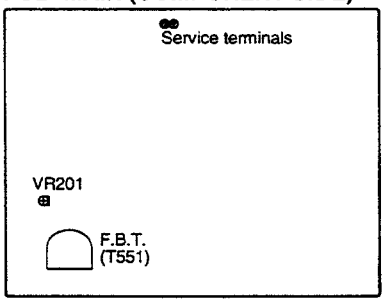
Measuring instrument	Oscilloscope (Probe 10 : 1)
Test point	collector of Q651
EXT trigger	---
Measurement range	DIV 5V TIM 20μs
Input signal	---
Input terminal	---

* This adjustment must follow the Purity and Convergence adjustments.
* Preheat the set for twenty minutes or more.
* Adjustment Item 9 (Sub Cont) must be performed immediately after this one.

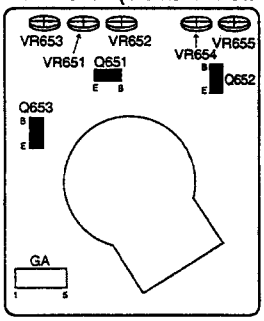
1. Set the no signal condition in AV mode.
2. Set VR651, VR652 and VR653 to the mechanical centre position.
3. Set VR654, VR655 and VR201 to the mechanical centre position.
4. Observe the waveform at the collector of Q651.(Use GA connector pin ② for ground.)
5. Adjust VR651 so that the pedestal level is 150V.

6. Observe the waveform at the collector of Q652.(Use GA connector pin ② for ground.)
7. Adjust VR652 so that the pedestal level is 150V.
8. Observe the waveform at the collector of Q653.(Use GA connector pin ② for ground.)
9. Adjust VR653 so that the pedestal level is 150V.

PCB–MAIN (COMPONENT SIDE)



PCB–CRT (SOLDER SIDE)



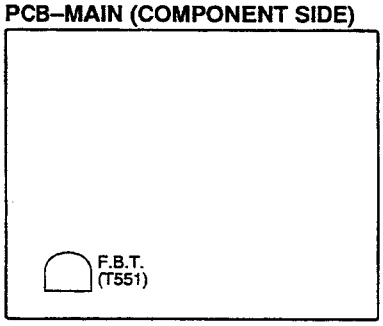
10. Short - circut the service terminals.
11. Adjust SCREEN control on F.B.T. to the point where one red, green or blue line becomes just visible.
12. Adjust two of VR651, VR652 and VR653 so that the horizontal line is white.
13. Open the service terminals.
14. Supply a video signal (White raster).
15. Adjust VR654 and VR 655 so that the entire screen is in pure white.

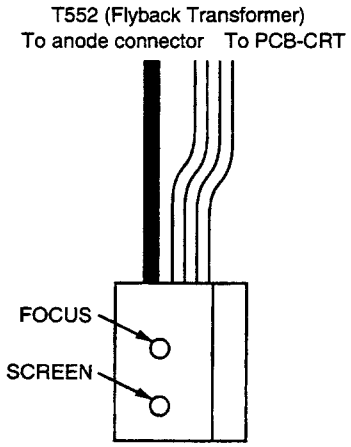
4. Focus	**Adjustment purpose**	Sharpness of picture.
	Symptom when incorrectly adjusted	Poor sharpness of picture.

Measuring instrument	---
Test point	---
EXT trigger	---
Measurement range	---
Input signal	RF signal (Programme)
Input terminal	RF IN terminal

1. Supplu an RF signal(Programme).
2. Adjust FOCUS volume on F.B.T. to the best overall focus.

PCB–MAIN (COMPONENT SIDE)

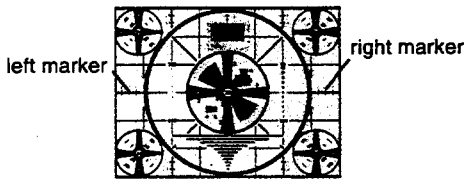




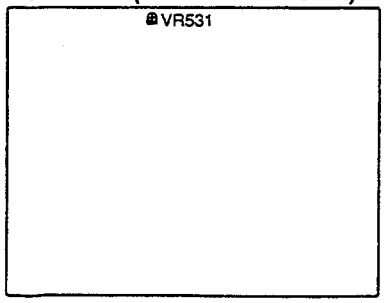
[Deflection circuit] 5. Horizontal Centre	**Adjustment purpose**	Horizontal position of picture.
	Symptom when incorrectly adjusted	Picture too shifted to the left, or the right.

Measuring instrument	---
Test point	---
EXT trigger	---
Measurement range	---
Input signal	Video signal (Monoscope)
Input terminal	VIDEO IN terminal

1. Supply a video signal (Monoscope).
2. Adjust VR531 so that readings of left and right markers are the same.



PCB–MAIN (COMPONENT SIDE)

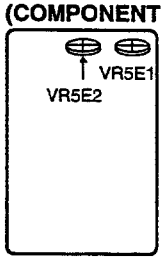


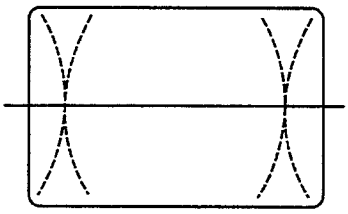
6. East West PCC (25" model only)	**Adjustment purpose** Horizontal linearity of picture. **Symptom when incorrectly adjusted** Horizontal distortion of picture.

Measuring instrument	---
Test point	---
EXT trigger	---
Measurement range	---
Input signal	Video signal (Crosshatch)
Input terminal	VIDEO IN terminal

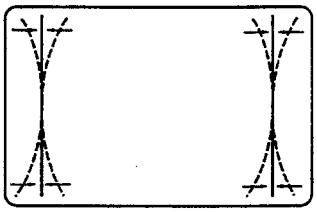
1. Supply a video signal (Crosshatch).
2. Press OPTIMUM button on the remote hand unit.
3 Observing the second line from both ends on the screen.
   Adjust VR5E1 so that the upper and lower distortions are symmetrical.
4. Adjust VR5E2 so that the both vertical lines are straight.
   Repeat step 3 to 4 above, if necessarly.

PCB–PCC CONT (COMPONENT SIDE)





VR5E1

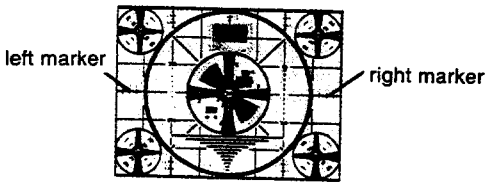


VR5E2

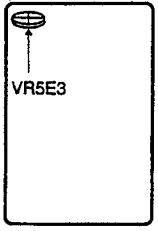
7. Horizontal Width (25" model only)	**Adjustment purpose** Horizontal width of picture. **Symptom when incorrectly adjusted** Too compressed or too expanded horizontal width of picture.

Measuring instrument	---
Test point	---
EXT trigger	---
Measurement range	---
Input signal	Video signal (Monoscope)
Input terminal	VIDEO IN terminal

1. Supply a video signal (Monoscope).
2. Press OPTIMUM button on the remote hand unit.
3. Adjust VR5E3 so that the sum of left and right markers is 4.5 ~ 5.8 (equivalent to 7 ~ 9% overscan).



PCB–PCC CONT (COMPONENT SIDE)

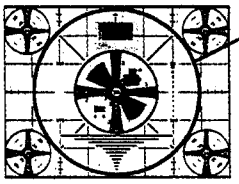


MC-Service

8. Vertical Height, Vertical Linearity, Vertical Centre	**Adjustment purpose**	Vertical heig earity of picture.
	Symptom when incorrectly adjusted	Too compressed or too expanded vertical height of picture. Vertical linearity of picture.

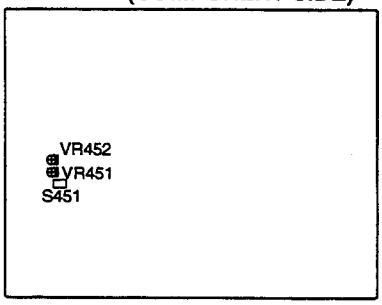
Measuring instrument	---
Test point	---
EXT trigger	---
Measurement range	---
Input signal	Video signal (Monoscope)
Input terminal	VIDEO IN terminal

1. Supply a video signal (Monoscope).
2. Press OPTIMUM button on the remote hand unit.
3. Adjust VR452 for approx. 90% vertical size of raster.
4. Adjust VR451 for symmetry of vertical linearity.
5. Adjust VR452 so that the largest circle is a complete round.
6. Adjust S451 so that the largest circle is vertical centre position.



monoscope

PCB–MAIN (COMPONENT SIDE)



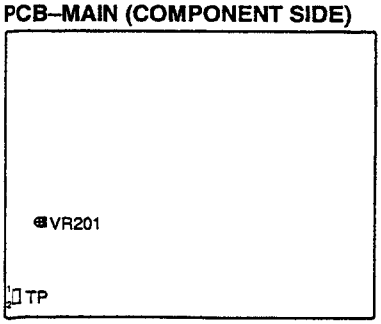
[Video circuit] 9. Sub Cont	**Adjustment purpose**	The best value of beam current.
	Symptom when incorrectly adjusted	Too bright or too dark picture.

Measuring instrument	DC milliammeter
Test point	+lead :TPconnector pin① –lead :TPconnector pin②
EXT trigger	---
Measurement range	---
Input signal	Video signal (Colour bar)
Input terminal	VIDEO IN terminal

* Preheat the set for twenty minutes or more.
1. Supply a video signal (Colour bar).
2. Press OPTIMUM button on the remote hand unit.
3. Observe the beam current values at TP connector pin ① and pin ②. (Plus lead to pin ①)
4. Adjust VR201 so that the beam current is a value listed in the table below.

	21 inch	25 inch
Beam Current	875±20μA	840 ±20μA

PCB–MAIN (COMPONENT SIDE)



PARTS LIST

MODEL : CT – 21M2EPM/CT – 25M2EPM

In order to expedite delivery of replacement part orders.
Specify : 1. Model number/Serial number
2. Part number and Description
3. Quantity
Unless full information is supplied, delay in execution of orders will result.

⚠ : Critical components

MARK	B	C	D	F	G	J	K
TOLERANCE (%)	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10

MARK	M	N	V	X	Z	P	Q
TOLERANCE (%)	± 20	± 30	+ 10 – 10	+ 40 – 20	+ 80 – 20	+ 100 – 0	+ 30 – 10

MARK	B	C	D	F	G
TOLERANCE (pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

ABBREVIATION

[21] : CT – 21M2EPM
[25] : CT – 25M2EPM

MC-Service

[21] : CT – 21M2EPM [25] : CT – 25M2EPM

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
		TUBES		
⚠ V 271	255P801010	CRT ASSY	A51EAL55X01	[21]
⚠ V 271	255P917010	CRT ASSY	A51EBV13X01	[21]
⚠ V 271	255P914030	CRT ASSY	A59EAK71X11	[25]
		INTEGRATED CIRCUITS		
IC101	272P847020	IC	TDA8361	
IC150	266P192020	IC	LA7910	
IC2J1	272P016010	IC	M51326P	
IC361	272P854010	IC	LA4597	
IC451	266P405010	IC	AN5521	
IC5E1	272P406010	IC	TEA2031A	[25]
IC601	272P848010	IC	TDA4661	
IC701	272P850020	IC	PCA84C840P	
IC702	274P171010	IC	ST24C02AB1	
IC703	266P010020	IC	μPC574J-K	
IC901	272P514010	IC	TEA2261	
IC951	267P076010	IC	SI-3120C	
IC952	266P922010	IC	μPC78M05H	
IC954	272P856010	IC	μPC78M08AHF	
		TRANSISTORS		
Q 111	260P543050	TRANSISTOR	JC501-Q	
Q 130	260P543050	TRANSISTOR	JC501-Q	
Q 231	260P543050	TRANSISTOR	JC501-Q	
Q 251	260P544030	TRANSISTOR	JA101-Q	
Q 2J1	260P632010	TRANSISTOR	DTC124ES	
Q 2J2	260P632010	TRANSISTOR	DTC124ES	
Q 2J3	260P632010	TRANSISTOR	DTC124ES	
Q 2J4	260P632010	TRANSISTOR	DTC124ES	
Q 2J5	260P632010	TRANSISTOR	DTC124ES	
Q 2J7	260P543050	TRANSISTOR	JC501-Q	
Q 301	260P543050	TRANSISTOR	JC501-Q	
Q 331	260P543050	TRANSISTOR	JC501-Q	
Q 332	260P543050	TRANSISTOR	JC501-Q	
Q 361	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 362	260P632010	TRANSISTOR	DTC124ES	
Q 363	260P632010	TRANSISTOR	DTC124ES	
Q 3J1	260P543050	TRANSISTOR	JC501-Q	
Q 431	260P349020	TRANSISTOR	2SC1472K-B	[25]
Q 551	260P557010	TRANSISTOR	2SD1555	
Q 552	260P422010	TRANSISTOR	2SC2482	
Q 5E1	260P543050	TRANSISTOR	JC501-Q	[25]
Q 651	260P571010	TRANSISTOR	2SC3789-D, E	
Q 652	260P571010	TRANSISTOR	2SC3789-D, E	
Q 653	260P571010	TRANSISTOR	2SC3789-D, E	
Q 654	260P544030	TRANSISTOR	JA101-Q	
Q 701	260P559060	TRANSISTOR	2SC1740S-S, E	
Q 702	260P544030	TRANSISTOR	JA101-Q	
Q 703	260P544030	TRANSISTOR	JA101-Q	
Q 704	260P544030	TRANSISTOR	JA101-Q	
Q 705	260P543050	TRANSISTOR	JC501-Q	
Q 706	260P632010	TRANSISTOR	DTC124ES	
Q 707	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 708	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 709	260P603010	TRANSISTOR	DTA124ES/UN4112	
Q 710	260P632010	TRANSISTOR	DTC124ES	
Q 901	260P572010	TRANSISTOR	2SD1556	
Q 902	260P543050	TRANSISTOR	JC501-Q	
Q 953	260P543050	TRANSISTOR	JC501-Q	
		DIODES		
D 150	264P370010	DIODE	1N4148	
D 231	264P483080	DIODE	RD5.1FB2	
D 233	264P483080	DIODE	RD5.1FB2	
D 234	264P483080	DIODE	RD5.1FB2	
D 236	264P483080	DIODE	RD5.1FB2	
D 237	264P483080	DIODE	RD5.1FB2	
D 251	264P483080	DIODE	RD5.1FB2	
D 252	264P483080	DIODE	RD5.1FB2	
D 253	264P483080	DIODE	RD5.1FB2	
D 255	264P370010	DIODE	1N4148	
D 256	264P370010	DIODE	1N4148	
D 280	264P462090	DIODE	RD7.5EB3	
D 281	264P462090	DIODE	RD7.5EB3	
D 282	264P462090	DIODE	RD7.5EB3	
D 2J1	264P370010	DIODE	1N4148	
D 2J2	264P370010	DIODE	1N4148	
D 451	264P371010	DIODE	BYD33G	
D 452	264P371010	DIODE	BYD33G	
D 453	264P371010	DIODE	BYD33G	
D 531	264P370010	DIODE	1N4148	
D 551	264P375020	DIODE	BY228	[25]
D 552	264P358070	DIODE	RU 4AM	[25]
D 553	264P371010	DIODE	BYD33G	
D 554	264P463020	DIODE	RD8.2EB2	
D 555	264P371010	DIODE	BYD33G	
D 556	264P371010	DIODE	BYD33G	
D 557	264P465010	DIODE	RD12EB1	
D 558	264P371010	DIODE	BYD33G	
D 559	264P462090	DIODE	RD7.5EB3	
D 5E1	264P370010	DIODE	1N4148	[25]
D 5E2	264P467080	DIODE	RD20EB3	[25]
D 601	264P483080	DIODE	RD5.1FB2	
D 651	264P370010	DIODE	1N4148	
D 652	264P370010	DIODE	1N4148	
D 706	264P370010	DIODE	1N4148	
D 710	264P370010	DIODE	1N4148	
D 711	264P370010	DIODE	1N4148	
D 712	264P370010	DIODE	1N4148	
D 714	264P370010	DIODE	1N4148	
D 715	264P370010	DIODE	1N4148	
D 716	264P370010	DIODE	1N4148	
D 717	264P370010	DIODE	1N4148	
D 718	264P370010	DIODE	1N4148	
D 719	264P370010	DIODE	1N4148	
D 720	264P370010	DIODE	1N4148	
D 791	264P584020	LIGHT EMITTING DIODE	SML1216W-C, D	
D 901	264P376010	DIODE	BYW56	

[21] : CT – 21M2EPM [25] : CT – 25M2EPM

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
D 902	264P376010	DIODE	BYW56	
D 903	264P376010	DIODE	BYW56	
D 904	264P376010	DIODE	BYW56	
D 905	264P371010	DIODE	BYD33G	
D 906	264P372010	DIODE	BYV96E	
D 907	264P481060	DIODE	RD3.0FB2	
D 908	264P370010	DIODE	1N4148	
D 909	264P481060	DIODE	RD3.0FB2	
D 951	264P358070	DIODE	RU 4AM	
D 952	264P358070	DIODE	RU 4AM	
D 954	264P358070	DIODE	RU 4AM	
D 955	264P461080	DIODE	RD6.2EB3	
D 956	264P370010	DIODE	1N4148	
		OTHER SEMICONDUCTORS		
⚠ RP991	265P071050	POSITIVE THERMISTOR	〈180N〉	
TH531	269P020010	THYRISTOR	N13T1	
		FILTERS		
CF111	296P084010	CERAMIC TRAP		
CF301	296P014020	CERAMIC FILTER	SFE-5.5MA	
SF101	296P034050	SAW FILTER	KAF-38.9MR-MN1	
		COILS		
⚠	409B099010	DEGAUSSING COIL		[21]
⚠	409B041080	DEGAUSSING COIL		[25]
L 101	321C041050	RF COIL	JISC-3212-0.4	
L 102	325C170030	PEAKING COIL	1.5μH-K SHIELD	
L 104	323P175020	VIF COIL	38.9 39.5MHz	
L 111	325C120010	PEAKING COIL	1.0μH-M	
L 112	325C161010	PEAKING COIL	6.8μH-K	
L 201	325C120010	PEAKING COIL	1.0μH-M	
L 2J1	325C111030	PEAKING COIL	10μH-K	
L 2J3	325C111030	PEAKING COIL	10μH-K	
L 301	325C161050	PEAKING COIL	15μH-K	
L 451	411P012010	BEAD FERRITE	B-6-31A1-A	
L 531	325C120010	PEAKING COIL	1.0μH-M	
L 551	321C030010	RF COIL	1.0μH-K	
L 552	411D009020	FERRITE CORE FILTER		
L 553	333P012030	H-LIN. COIL		[21]
L 553	333P012010	H-LIN. COIL		[25]
L 554	409P748010	PCC COIL	1MHz	[25]
L 555	409P749010	CHOKE COIL	15MHz	[25]
L 701	325C120010	PEAKING COIL	1.0μH-M	
L 702	325C121030	PEAKING COIL	10μH-K	
L 703	325C121030	PEAKING COIL	10μH-K	
L 704	325C121030	PEAKING COIL	10μH-K	
L 705	325C121030	PEAKING COIL	10μH-K	
L 901	325C121010	PEAKING COIL	6.8μH-K	
L 902	321C030050	RF COIL	2.2μH-K	
L 903	411P001070	FERRITE LEAD	BF60T	
L 905	411P001070	FERRITE LEAD	BF60T	
L 951	325D059060	PEAKING COIL	390μH-K	
L 952	409P674020	FILTER COIL		
L 993	351P047020	LINE FILTER	Z85555TA	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION	
		TRANSFORMERS		
⚠ T 551	334P216030	FLYBACK	MSU1FST04	[21]
⚠ T 551	334P216010	FLYBACK	MSU1FST03	[25]
T 552	336P017010	H.DRIVE		
⚠ T 901	350P593010	POWER		[21]
⚠ T 901	350P593020	POWER		[25]
		VARIABLE RESISTORS		
VR101	127C380080	VR-SEMIFIXED	1/5W B10KΩ-M	
VR201	127C381020	VR-SEMIFIXED	1/5W B100KΩ-M	
VR451	127C380070	VR-SEMIFIXED	1/5W B5KΩ-M	[25]
VR452	127C380010	VR-SEMIFIXED	1/5W B200Ω-M	
VR531	127C380080	VR-SEMIFIXED	1/5W B10KΩ-M	
VR5E1	127C180060	VR-SEMIFIXED	1/5W B3KΩ-M	[25]
VR5E2	127C181050	VR-SEMIFIXED	1/5W B500KΩ-M	[25]
VR5E3	127C190050	VR-SEMIFIXED	1/5W B2KΩ-M	[25]
VR651	127C180010	VR-SEMIFIXED	1/5W B200Ω-M	
VR652	127C180010	VR-SEMIFIXED	1/5W B200Ω-M	
VR653	127C180010	VR-SEMIFIXED	1/5W B200Ω-M	
VR654	127C180040	VR-SEMIFIXED	1/5W B1KΩ-M	
VR655	127C180040	VR-SEMIFIXED	1/5W B1KΩ-M	
VR951	127C380080	VR-SEMIFIXED	1/5W B10KΩ-M	[21]
VR951	127C380090	VR-SEMIFIXED	1/5W B20KΩ-M	[25]
		RESISTORS		
⚠ R 368	103P378060	FUSE	1/4W 3.3Ω-J	
⚠ R 369	103P378060	FUSE	1/4W 3.3Ω-J	
⚠ R 456	103P378040	FUSE	1/4W 2.2Ω-J	
R 554	102P243020	CEMENT METAL	5W 3.9KΩ-K/J	
R 557	102P220010	CEMENT WIRE	10W 10Ω-K/J	
⚠ R 558	103P442050	FUSE METAL	1W 1.0KΩ-K/J	
⚠ R 559	103P397090	FUSE	1/2W 0.82Ω-J	[21]
⚠ R 561	103P397090	FUSE	1/2W 0.82Ω-J	
⚠ R 566	103P378000	FUSE	1/4W 1.0Ω-J	
⚠ R 681	103P448020	FUSE METAL	1W 1.5Ω-K/J	[21]
⚠ R 681	103P448030	FUSE METAL	1W 1.8KΩ-K/J	[25]
R 921	109D074010	CEMENT METAL	5W 1.8KΩ-K/J	
R 993	102P081040	CEMENT WIRE	7W 4.7Ω-K	
		CAPACITORS AND TRIMMERS		
C 557	189P071070	C-M-PLASTIC-PP	200V 0.39μF-J	[21]
C 557	189P071010	C-M-PLASTIC-PP	200V 0.56μF-J	[25]
C 558	189P071080	C-M-PLASTIC-PP	200V 0.47μF-J	[25]
C 904	185D059040	ELECTROLYTIC-C	H385V 150M	
⚠ C 981	189P091010	CERAMIC CAPACITOR	AC400V E4700pF-M	
		SWITCHES		
S 451	434C021010	LEVER SWITCH	1-3	
S 701	432P066030	KEY BOARD SWITCH	1-1 L=8.35 S	
S 702	432P066030	KEY BOARD SWITCH	1-1 L=8.35 S	
S 703	432P066030	KEY BOARD SWITCH	1-1 L=8.35 S	
S 704	432P066030	KEY BOARD SWITCH	1-1 L=8.35 S	
S 705	432P066030	KEY BOARD SWITCH	1-1 L=8.35 S	
S 706	432P066030	KEY BOARD SWITCH	1-1 L=8.35 S	
⚠ S 991	432C048010	PUSH SWITCH	AC250V 5A/80A	

MC-Service

[21] : CT – 21M2EPM [25] : CT – 25M2EPM

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION		SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		MISCELLANEOUS						
⚠	449C081010	CRT SOCKET						
⚠ F 991	283D047040	FUSE	2A-T					
⚠ PC951	268P056010	PHOTO COUPLER	CNY17GF-4					
SP391	480P403030	SPEAKER	C120PX1194MA2					
TU101	295P254090	TUNER						
X 601	285P132020	CRYSTAL RESONATOR	TDA8362					
X 701	285P118030	CRYSTAL RESONATOR	9.8304MHz					
⚠ Z 551	299P087060	SURGE PROTECTOR	PRF 2000	[25]				
Z 701	939P296090	PREAMP UNIT	HC-437M					
⚠ Z 951	299P087050	SURGE PROTECTOR	PRF 1600					
⚠ Z 953	299P132010	SURGE PROTECTOR	PRF 5000					
		PRINTED CIRCUIT BOARD ASSY'S						
⚠	920D443050	AV PCB ASSY		[21]				
⚠	920D443090	AV PCB ASSY		[25]				
⚠	920D442050	CRT PCB ASSY		[21]				
⚠	920D442090	CRT PCB ASSY		[25]				
⚠	920A395016	MAIN PCB ASSY		[21]				
⚠	920A395015	MAIN PCB ASSY		[25]				
⚠	920D445090	PCC CONTROL PCB ASSY		[25]				
⚠	920D444050	POWER SUB PCB ASSY		[21]				
⚠	920D444090	POWER SUB PCB ASSY		[25]				
		MECHANICAL PARTS						
	669D220030	SCREW	3X10 46LA005					
	669D221060	SCREW	4X16 46LA005					
	669D212010	SCREW	3X12					
		COSMETIC PARTS						
⚠	246C022070	AC POWER CORD						
⚠	700C150040	BACK COVER		[21]				
⚠	700C150030	BACK COVER		[25]				
	702C933050	DOOR		[21]				
	702C934060	DOOR		[25]				
	761C437010	DOOR CATCH						
	700A643020	FRONT CABINET		[21]				
	700A638020	FRONT CABINET		[25]				
	704C378050	POWER KNOB		[21]				
	704C379010	POWER KNOB		[25]				
		PACKING PARTS AND ACCESSORY						
	803A317010	PACKING CUSHION		[21]				
	803A313010	PACKING CUSHION		[25]				
⚠	872C081070	INSTRUCTION BOOK						
	831D283010	PACKING BAG						
	801C181030	PACKING CASE		[21]				
	801C171030	PACKING CASE		[25]				
	831D222010	PACKING BAG		[21]				
	831D222030	PACKING BAG		[25]				
	829D138010	PACKING SHEET	1700X375X.5	[21]				
	829D138020	PACKING SHEET	1900X375X.5	[25]				
⚠	290P015010	REMOTE HAND UNIT						

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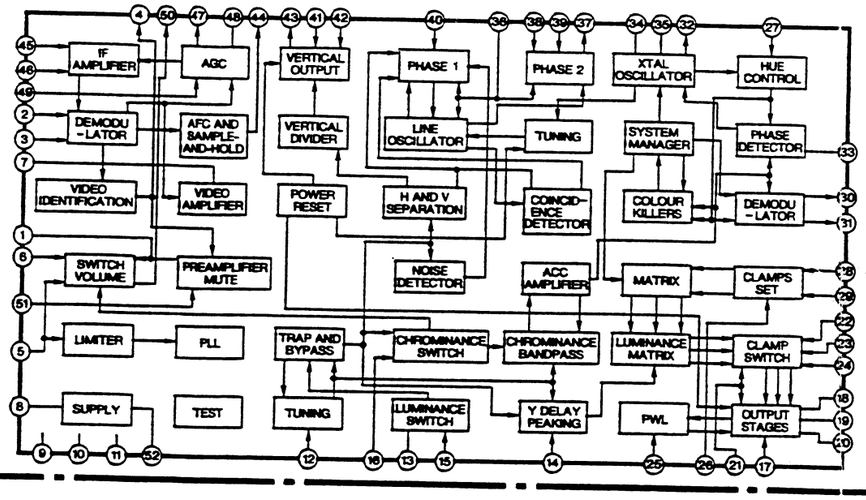
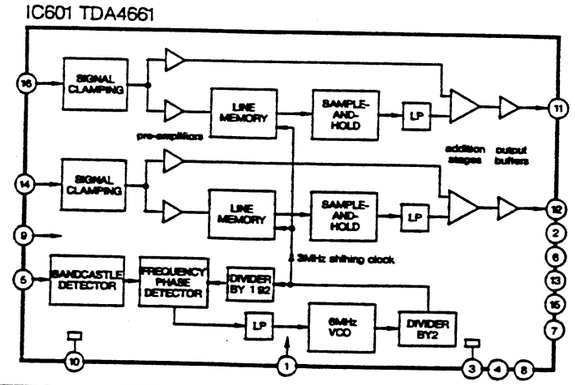
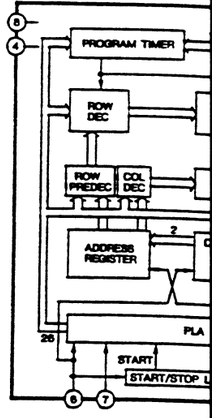
IC101 TDA8361



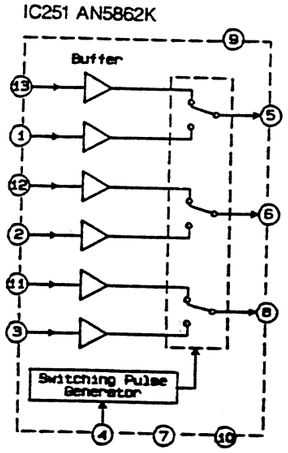
IC601 TDA4661



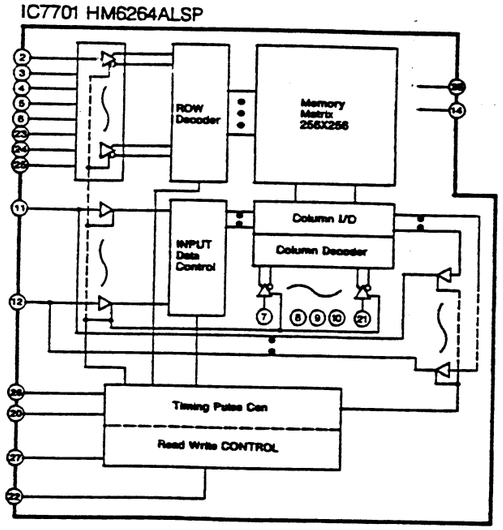
IC702 ST24C02AB1



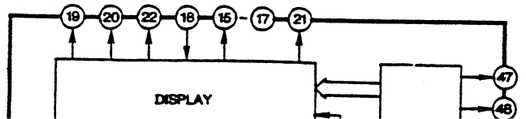
IC251 AN5862K



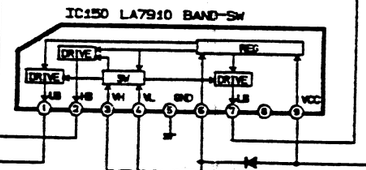
IC7701 HM6264ALSP



IC7702 SAA5246



IC150 LA7910 BAND-SW



IC101 TDA8361 VIF/SIF/VCJ

Q231 JC501-Q.R VIDEO-OUT-1

Q251 JA101-Q.R PAST-BLK -BUFFER

Q331 JC501-Q.R AUDIO-OUT-1

Q332 JC501-Q.R AUDIO-OUT-AMP

Q111 JC501-Q.R VIDEO-DET-1

Q301 JC501-Q.R VIDEO-DET-2

Q130 JC501-Q.R VIDEO-DET-3

R IN

G IN

B IN

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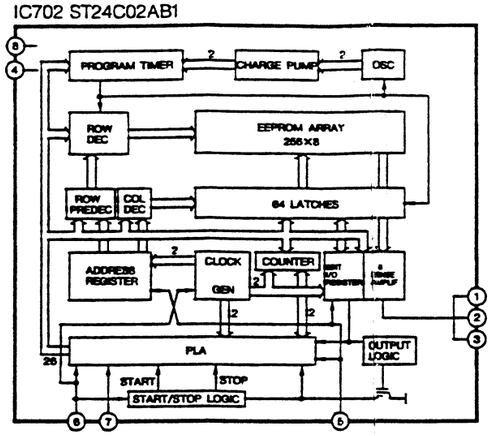
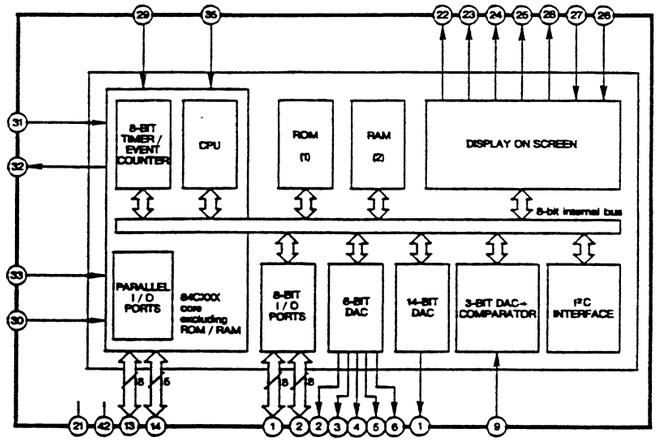
SCHEMATIC DIAGRAM MODEL

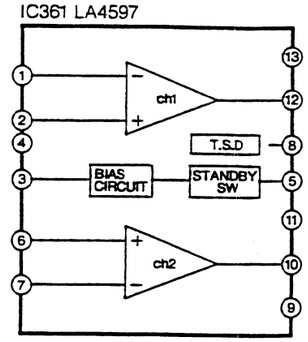
IC702 ST24C02AB1

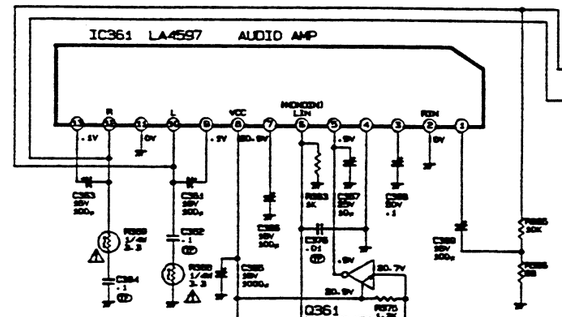


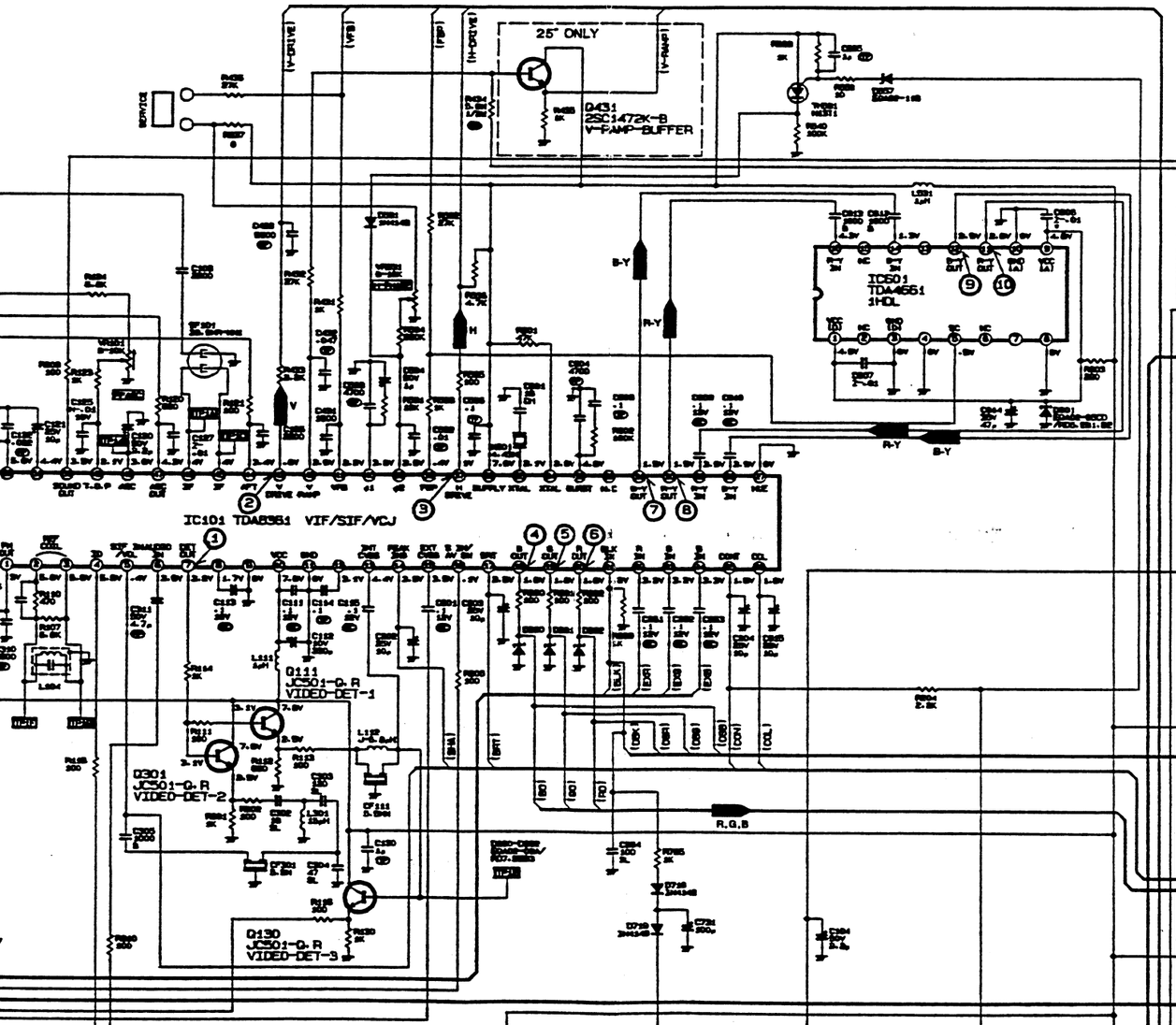
IC701 PCA84C840

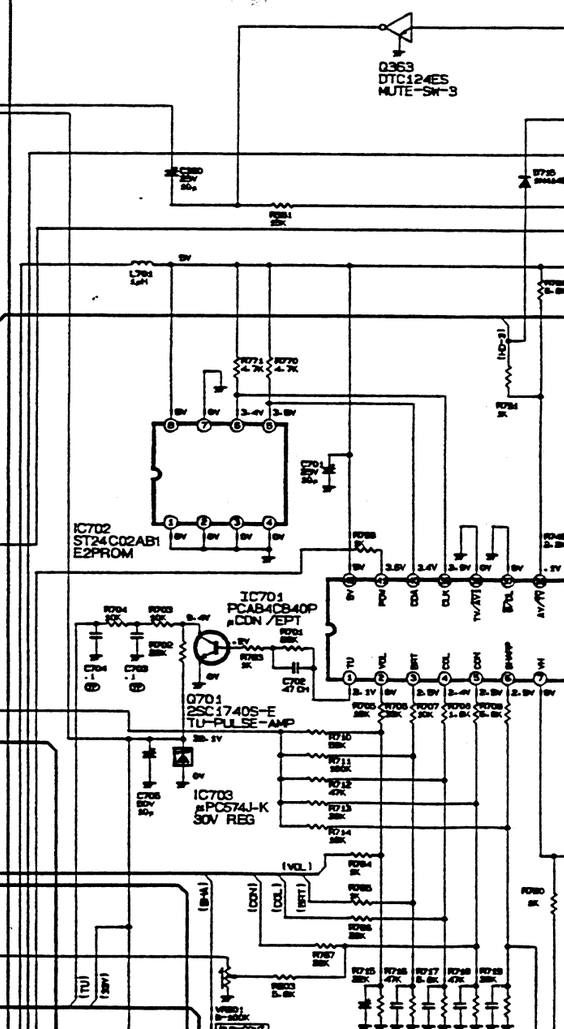


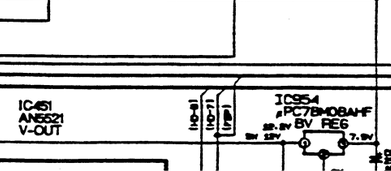
IC361 LA4597







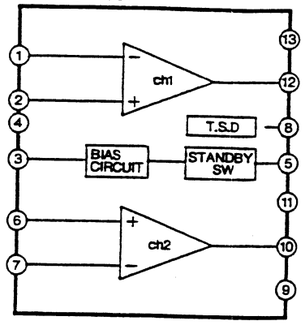


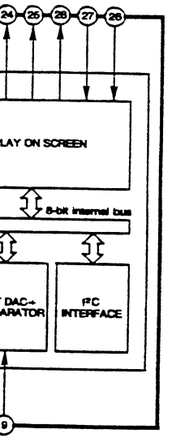


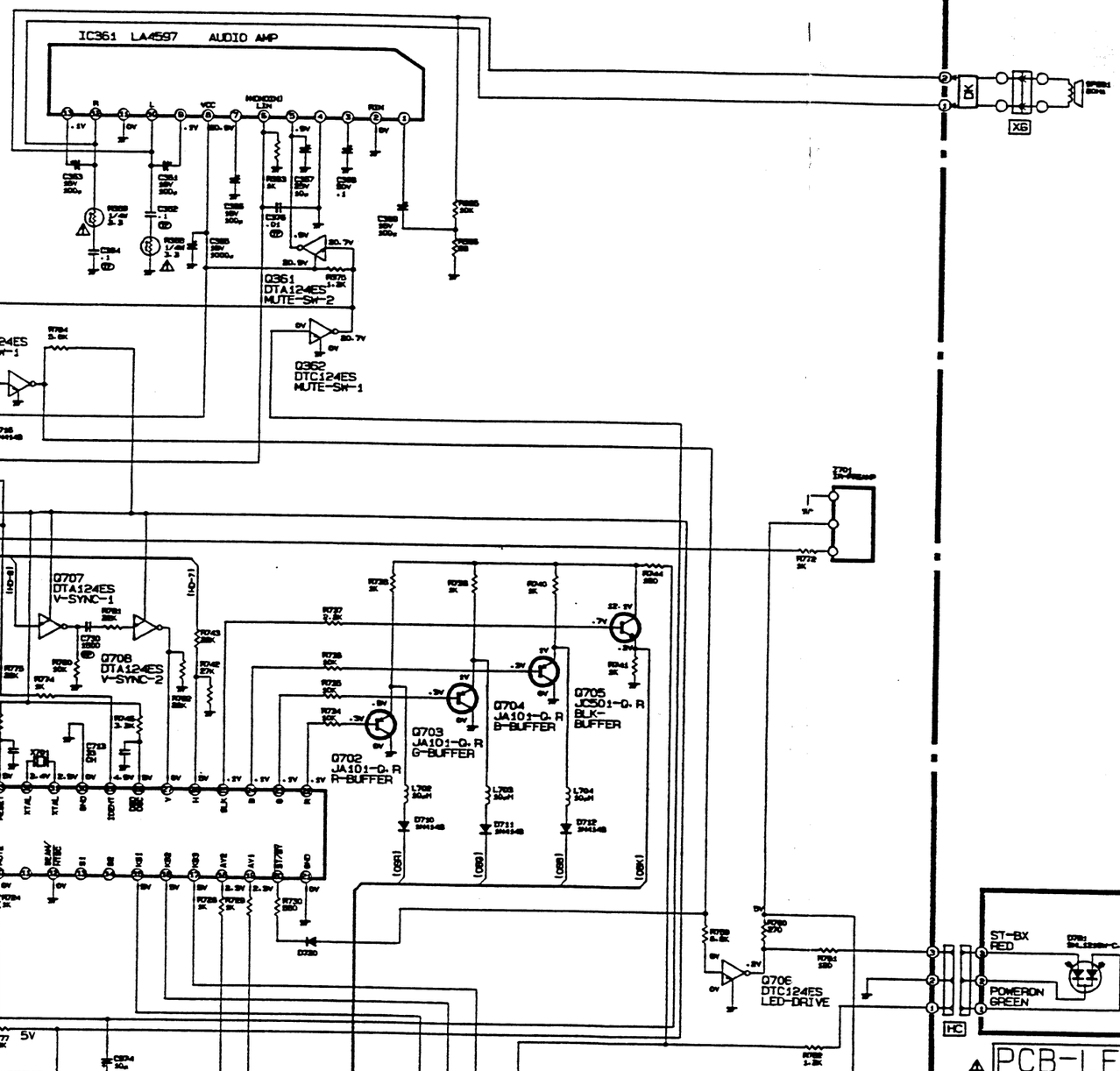
SCHEMATIC DIAGRAM MODELS: CT-21M2EPM CT-25M2EPM

MC-Service

IC361 LA4597







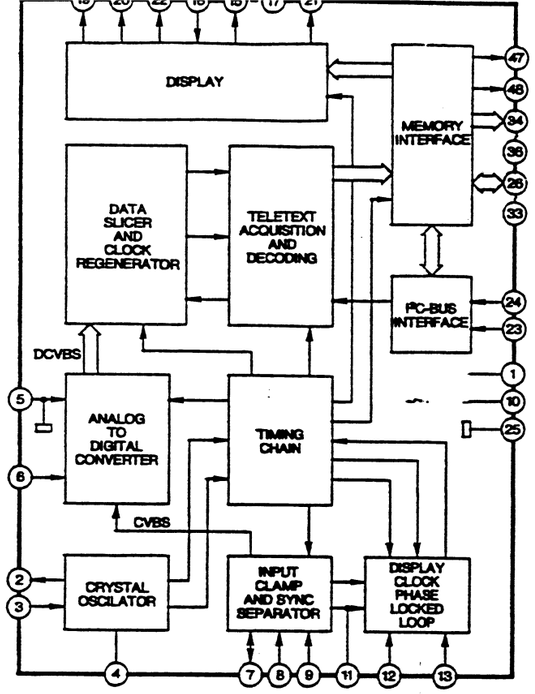
SERVICING PRECAUTION

SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THERFORE REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS. FOR ACCURACY OF THE REPLACEMENT REFER TO THE PARTS LIST OF SERVICE MANUAL.
DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

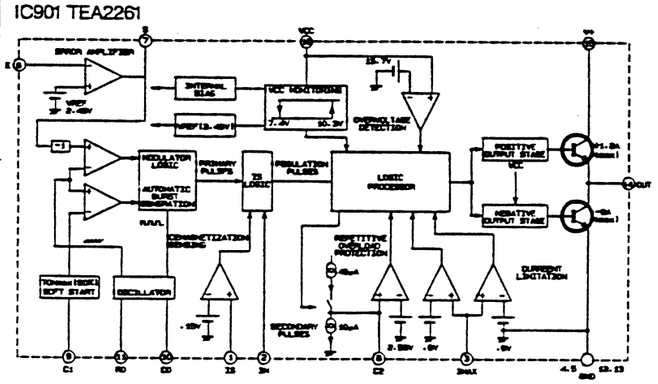
• NOTE

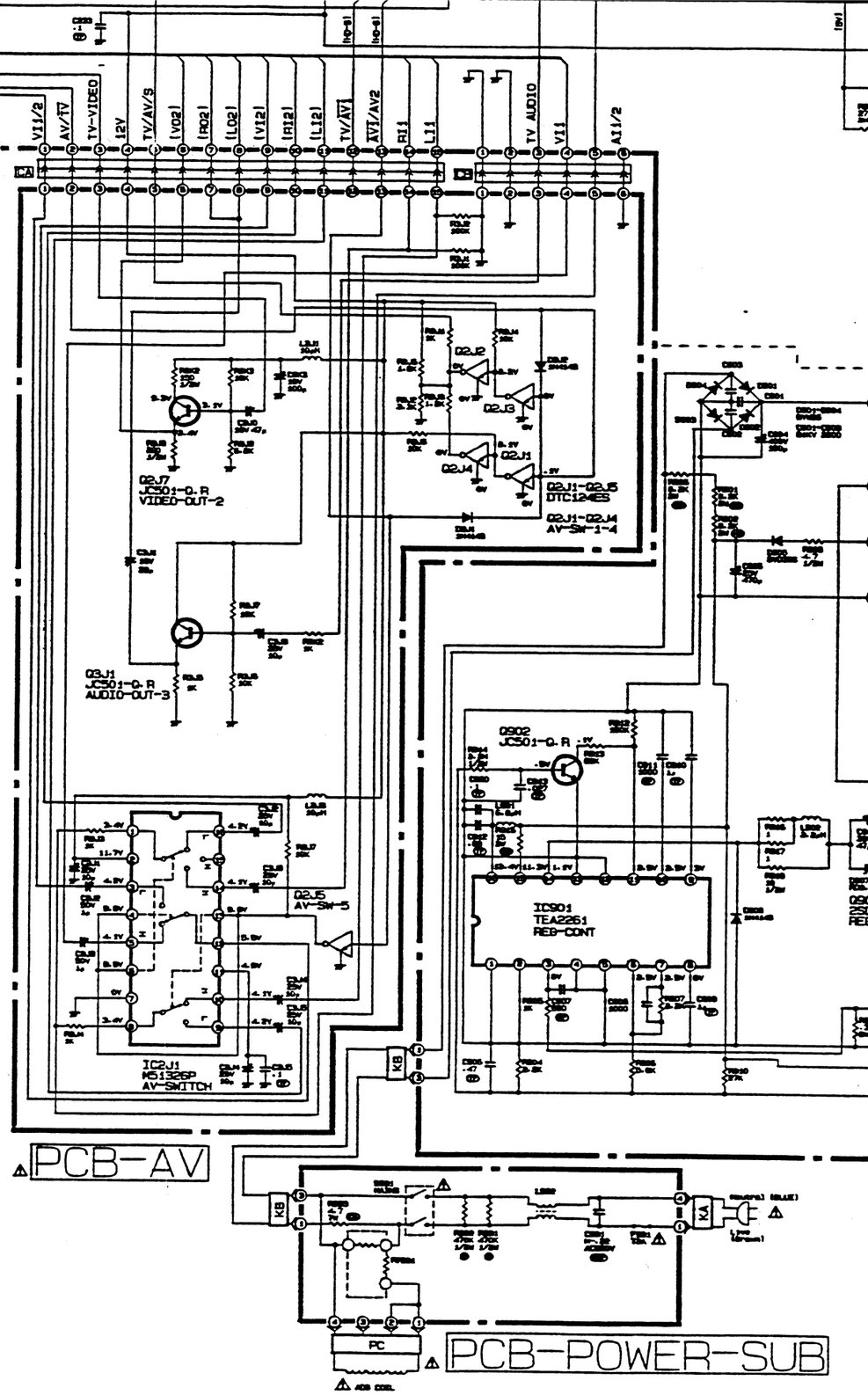
1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with offset PAL colour bar signal.
3. TP6A, etc. show Test Points.
4. CAPACITORS

Value	Not indicated	PF, for numbers more than 1 μF, for numbers less than 1
Dielectric Strength	Not indicated :50V	
Tolerance	Not indicated =±10%	No Tolerance is indicated for electrolytic capacitors and ±20%
	G=±2% P=+100% Q=+30% C=±0.25PF J=±5% −0% −10% D=±0.5PF K=±10% Z=+80% T=+200% F=±1PF M=±20% −20% −0% G=±2PF	
Sort	I Parts except for chips	Not indicated : Ceramic capacitor (MF) : Polyester capacitor (PP) : Polypropy lene film capacitor (ALM) : Aluminus electrolytic capacitor (TF) : Twin film capacitor (SC) : Semiconductor ceramic capacitor (MP) : Metalized paper (MPP) : Metalized plastic film capacitor (MMP) : Metalized polyester capacitor (MF.PP) : Polyester polypropylence film capacitor (PS) : Styrol capacitor (TAN or TANT) : Tantalum capacitor : Electrolytic capacitor (BP or NP) : Non polarized electrolytic capacitor
	II Chips	Not indicated : Ceramic capacitor chip : Electrolytic capacitor (BP or NP) : Non polarized electrolytic



IC901 TEA2261





MC-Service

*** DIFFERENCE TABLE** ○ : Applied — : Not Applied

PARTS / MODEL	C451	C452	C459	C462	C554	C555	C556	C557	C558	C560	C568	J317	J329	J346	J355	R458	R461	R4
CT-21M2EPM	.068	2700	—	.056	○	3900	—	.39	—	1000μ	—	○	○	○	○	39K	1.8	6
CT-25M2EPM	.047	2200	○	.047	—	9100	○	.56	○	3000μ	○	—	—	—	—	15K	.68	3

IC451
AN5521
V-OUT

IC954
μPC78M08AH-F
8V REG

IC951
SI-3120C
12V REG

IC952
μPC78M05H
5V REG

Q951
2SD1556
H-OUT

Q952
2SC2482
H-DRIVE

Q953
2SC1815
ERROR-AMP

PC951
CNY17F-4

Q651
2SC3789-DE
R-OUT

Q652
2SC3789
G-OUT

Q653
2SC3789
B-OUT

Q654
JA101-Q-R
DRIVE-REF

R864~R856
21":270
25":220

SOCKET-CRT

21" ONLY

IC5E1
TEA2031A
E/W PCC-CONT

Q5E1
2SC1815
PCC-AMP

25" ONLY

DY

TP

LB

6A

6A

PCB-MAIN

PCB-PCC-CONT

PCB-SUB

DTC124ES

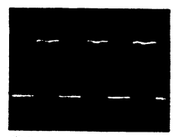
DTA124ES

	R458	R461	R462	R463	R464	R466	R559	R954	R955	R958	R962	VR451	VR951	Z551
	39K	1.8	680	1.2K	—	330	○	120K	7.5K	8.2K	—	—	B10K	—
	15K	.68	390	820	○	1K	—	160K	8.2K	12K	○	○	B20K	○

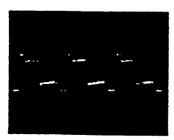
CHASSIS WAVEFORMS

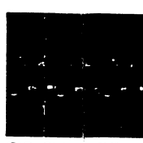
①2.4Vp-p(H)

②8.8Vp-p(V)


③2.0Vp-p(H)

④3.8Vp-p(H)


⑤3.6Vp-p(H)

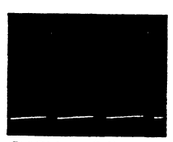

⑥3.6Vp-p(H)

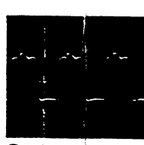
⑧0.5Vp-p(H)

⑨1.3Vp-p(H)

⑩0.9Vp-p(H)

⑪5.5Vp-p(V)


⑫12Vp-p(V)


⑬0.7Vp-p(H)

PCB-CRT

PCB-PCC-CONT

SOCKET-CRT

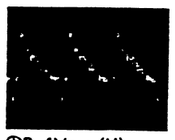
R864~R656
21":270
25":220

V271
21": A51EAL55X01
25": A59EAK71X11

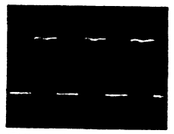
21" ONLY

CODE	COLOUR
A	BLACK (Bk)
B	BROWN (Br)
C	RED (R)
D	ORANGE (O)
E	YELLOW (Y)
F	GREEN (Gn)
G	BLUE (Bu)
H	VIORET (V)
J	GRAY (Gy)
K	WHITE (W)
L	PINK (P)

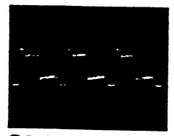
CHASSIS WAVEFORMS

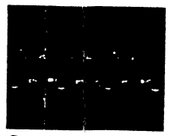

①2.4Vp-p(H)

②8.8Vp-p(V)


③2.0Vp-p(H)

④3.8Vp-p(H)


⑤3.6Vp-p(H)


⑥3.6Vp-p(H)

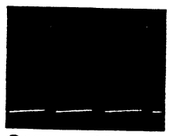
⑦0.7Vp-p(H)

⑧0.5Vp-p(H)

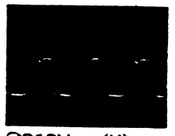
⑨1.3Vp-p(H)

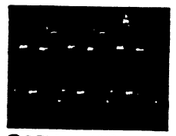
⑩0.9Vp-p(H)

⑪5.5Vp-p(V)

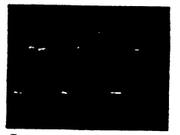

⑫12Vp-p(V)

⑬0.7Vp-p(H)


⑭210Vp-p(H)


⑮95Vp-p(H)

⑯100Vp-p(H)


⑰98Vp-p(H)

Capacitor	I	Parts except for chips	Not indicated : Ceramic capacitor (E) : Electrolytic capacitor (NP) : Non polarized electrolytic capacitor
	II	Chips	Not indicated : Ceramic capacitor chip (BP)or(NP) : Electrolytic capacitor Non polarized electrolytic capacitor chip
Characteristic (only ceramic capacitor)			Not indicated : F or B(high dielectric percentage) CH,SL,etc. : Temperature compensating types

5. Resistors

Value			Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)
Wattage		Parts except for chips	Not indicated = 1/4W or 1/6W
		Chips	Not indicated = 1/10W
Tolerance			Not indicated =±5% D=±0.5% J=±5% F=±1% K=±10%
Short	I	Parts except for chips	Not indicated : Carbon resistor (S) : Fixed composition resistor (MB) : Metal codde film resistor(type B) (CF) : Cemented resister (W) : Wire wound resister (M) : Metal film resister (MPC) : Metal plate cement resister (ML) : Metal liner resister
	II	Chip	Not indicated : Carbon resistor chip

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SPECIFIC SYMBOL

Zener Diode	Varistor
Varicap	Crystal unit
Posistor	Air Gap
Thermistor	Part(resistor) attached on the copper-foil side of PCB
Fusible Resistor	Ceramic filter

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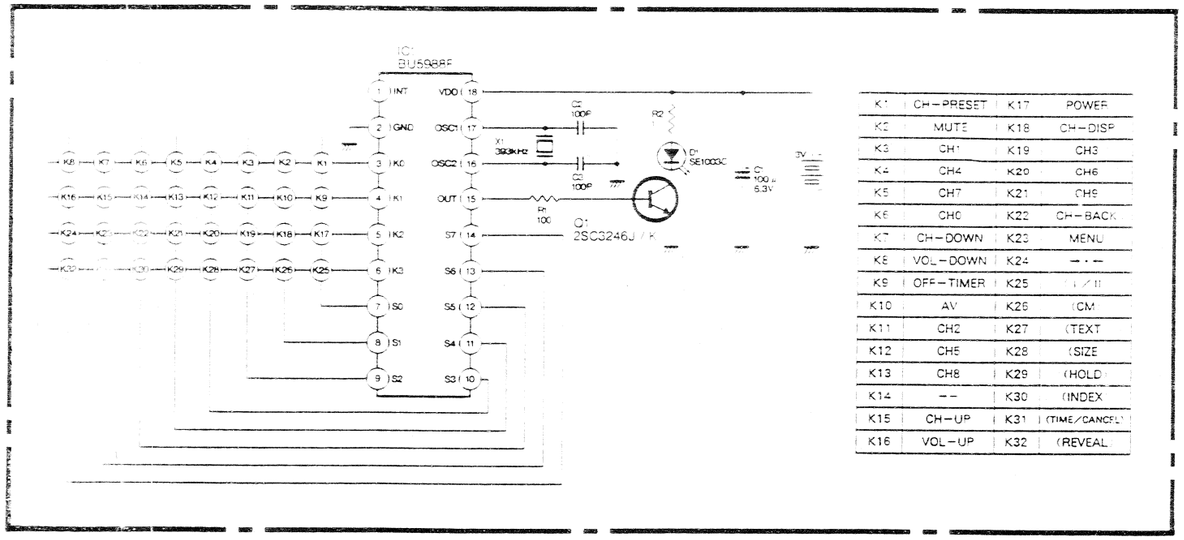
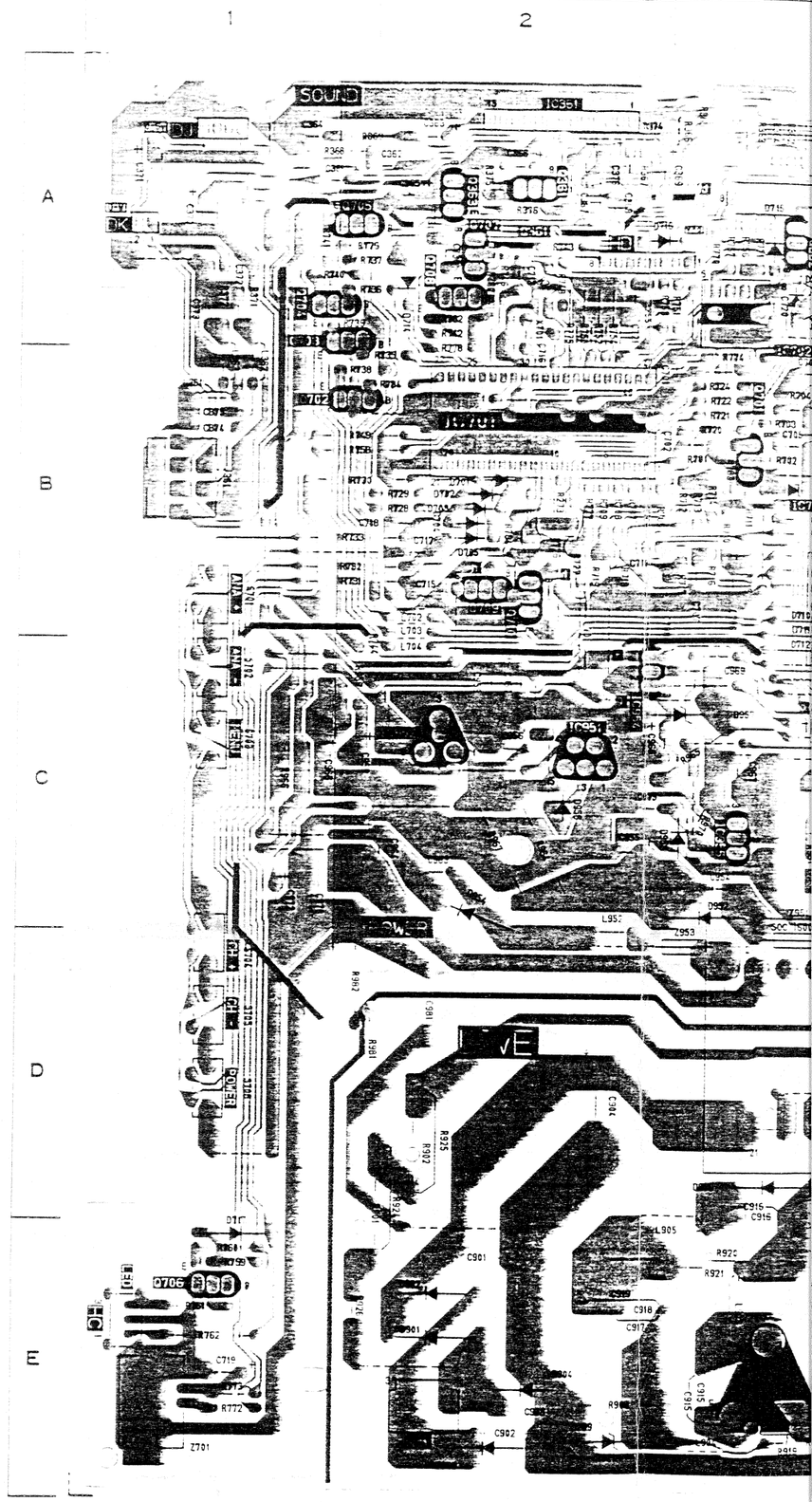
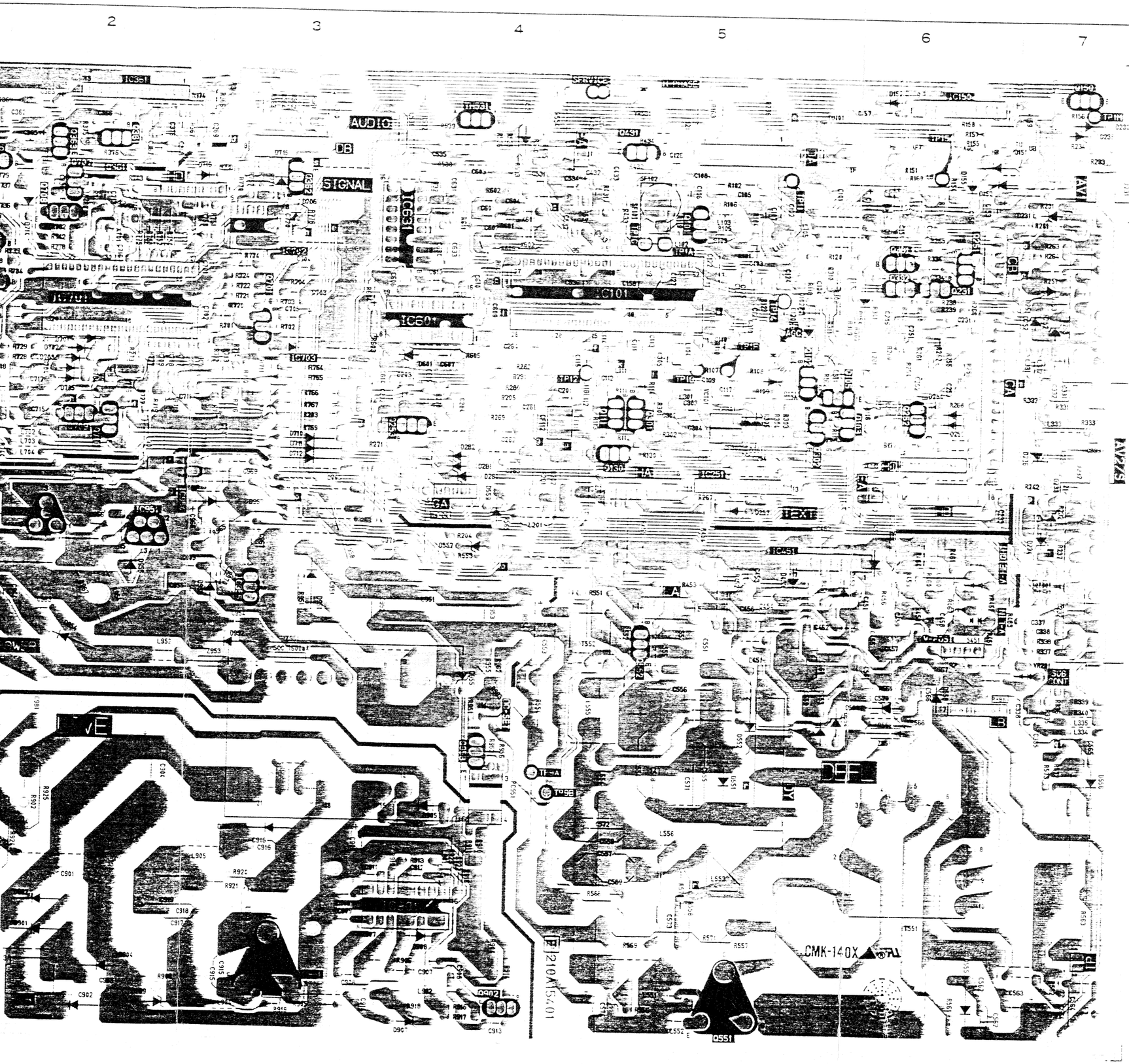
TRANSMITTER-REMOCON



K1	CH−PRESET	K17	POWER
K2	MUTE	K18	CH−DISP
K3	CH1	K19	CH3
K4	CH4	K20	CH6
K5	CH7	K21	CH9
K6	CH0	K22	CH−BACK
K7	CH−DOWN	K23	MENU
K8	VOL−DOWN	K24	−・−
K9	OFF−TIMER	K25	Ⅰ／Ⅱ
K10	AV	K26	(CM
K11	CH2	K27	(TEXT
K12	CH5	K28	(SIZE
K13	CH8	K29	(HOLD
K14	−−	K30	(INDEX
K15	CH−UP	K31	(TIME/CANCEL)
K16	VOL−UP	K32	(REVEAL

PCB−MAIN





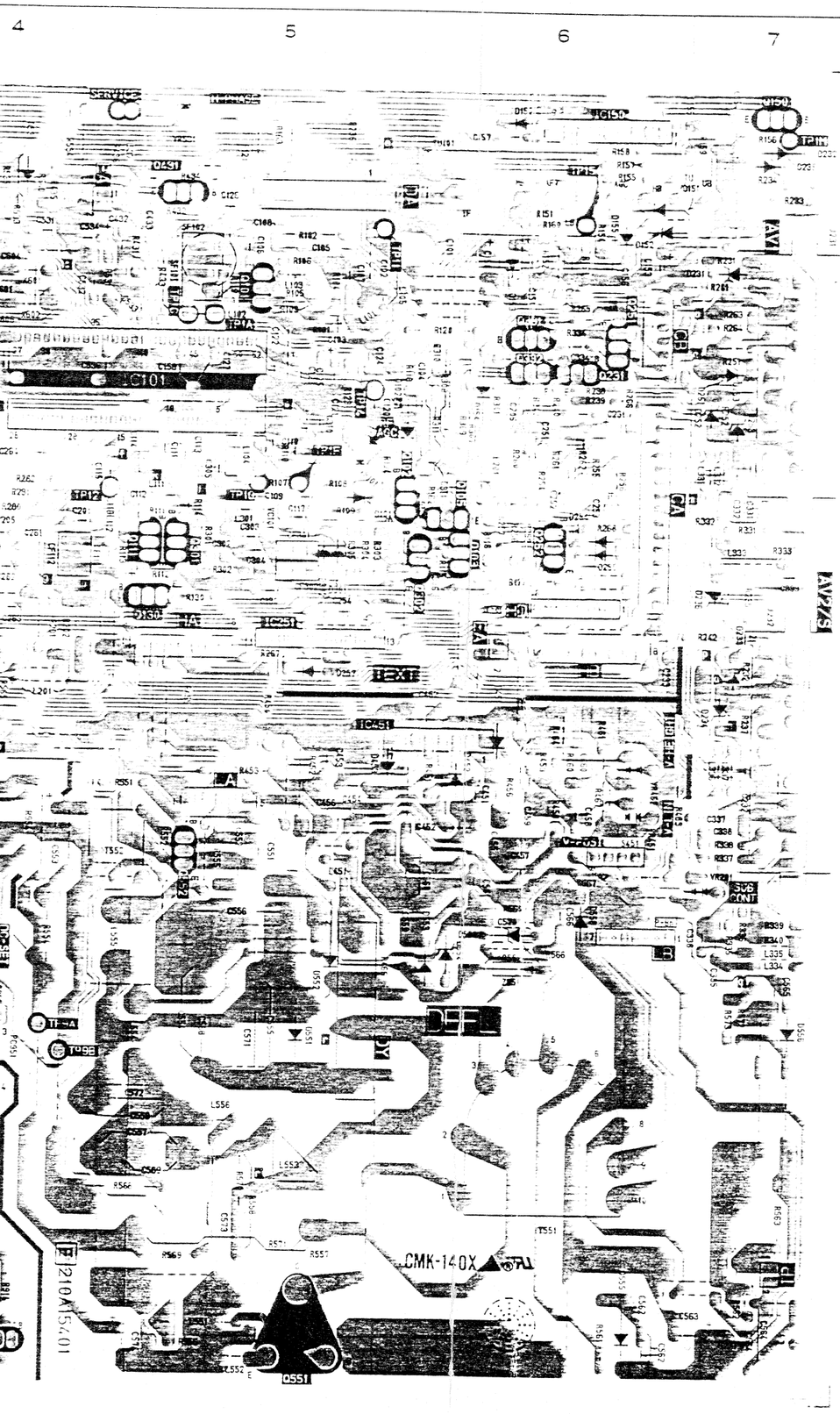
PCB-MAIN

SYMBOL NO.	ADDRESS
CF111	B – 4
CF112	B – 4
CF301	B – 5
CF302	B – 5
D101	B – 5
D102	B – 5
D150	A – 6
D151	A – 6
D152	A – 6
D153	A – 6
D154	B – 6
D155	A – 6
D231	A – 8
D232	A – 8
D232	C – 7
D233	C – 7
D235	A – 8
D236	B – 7
D251	B – 7
D252	B – 7
D253	B – 7
D254	B – 6
D255	B – 6
D257	C – 5
D280	C – 4
D281	C – 4
D282	B – 4
D301	B – 5
D302	B – 5
D451	C – 6
D452	C – 6
D453	C – 5
D531	A – 4
D551	D – 5
D552	D – 5
D553	D – 6
D554	D – 6
D555	E – 6
D556	D – 7
D557	C – 4
D558	D – 6
D559	C – 4
D560	D – 6
D601	B – 4
D701	B – 2
D702	B – 2
D703	B – 2
D704	B – 2
D705	B – 2
D706	A – 3
D710	B – 3
D711	B – 3
D712	C – 3
D714	A – 2
D715	A – 3
D716	A – 2
D717	E – 1
D901	E – 2
D902	E – 2

SYMBOL NO.	ADDRESS
D903	E – 2
D904	E – 2
D905	D – 4
D906	D – 3
D907	E – 4
D908	E – 4
D909	E – 2
D951	C – 3
D952	C – 3
D954	C – 2
D955	D – 4
D956	C – 2
D957	C – 3
D958	C – 2
D958	C – 3
IC101	B – 5
IC150	A – 6
IC251	C – 5
IC361	A – 2
IC451	C – 5
IC601	B – 4
IC631	A – 3
IC701	B – 2
IC702	A – 3
IC703	B – 3
IC901	E – 4
IC951	C – 2
IC952	C – 2
IC954	C – 2
IC955	C – 3
L101	A – 5
L102	A – 5
L103	A – 5
L104	B – 5
L105	A – 5
L111	B – 5
L112	B – 4
L201	B – 6
L201	C – 4
L301	B – 5
L331	B – 7
L332	B – 7
L333	B – 7
L334	D – 7
L335	D – 7
L336	C – 7
L337	C – 7
L361	B – 1
L362	B – 1
L363	B – 1
L451	C – 5
L531	A – 3
L551	E – 5
L552	E – 5
L553	E – 5
L554	D – 4
L555	D – 4
L556	D – 5

SYMBOL NO.	ADDRESS
L701	B – 2
L702	B – 2
L703	B – 2
L704	C – 2
L705	C – 3
L901	E – 4
L902	E – 4
L903	E – 3
L904	E – 3
L905	E – 3
L951	C – 4
L952	C – 2
PC951	D – 4
Q101	A – 5
Q102	B – 5
Q103	B – 6
Q105	B – 6
Q111	B – 4
Q130	C – 5
Q150	A – 7
Q231	B – 6
Q251	A – 6
Q252	B – 6
Q253	B – 3
Q301	B – 5
Q302	B – 6
Q331	A – 6
Q332	B – 6
Q361	A – 2
Q361	A – 2
Q362	A – 3
Q363	A – 2
Q431	A – 5
Q551	E – 5
Q552	D – 5
Q701	B – 3
Q702	B – 1
Q703	A – 1
Q704	A – 1
Q705	A – 1
Q706	E – 1
Q707	A – 2
Q708	A – 2
Q709	B – 2
Q710	B – 2
Q901	E – 3
Q902	E – 4
Q953	D – 4
S451	C – 6
S701	B – 1
S702	C – 1
S703	C – 1
S704	D – 1
S705	D – 1
S706	D – 1
SF101	A – 5

SYMBOL NO.	ADDR
SF102	A –
T551	E –
T552	C –
T901	D –
TH531	A –
TP11	A –
TP12	B –
TP14	B –
TP15	A –
TP1A	A –
TP1C	A –
TP1F	B –
TP1G	B –
TP1M	A –
TP9A	D –
TP9B	D –
TU101	A –
VC101	B –
VR101	B –
VR201	D –
VR451	C –
VR452	C –
VR531	A –
VR951	D –
X601	A –
X602	A –
X701	A –
Z551	D –
Z701	E –
Z951	C –
Z953	D –



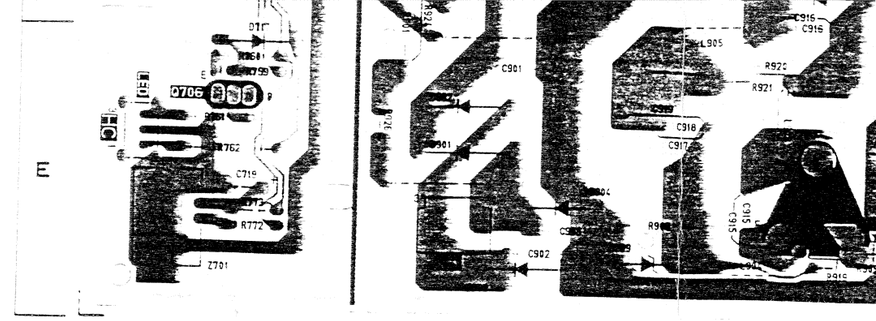
PCB-MAIN

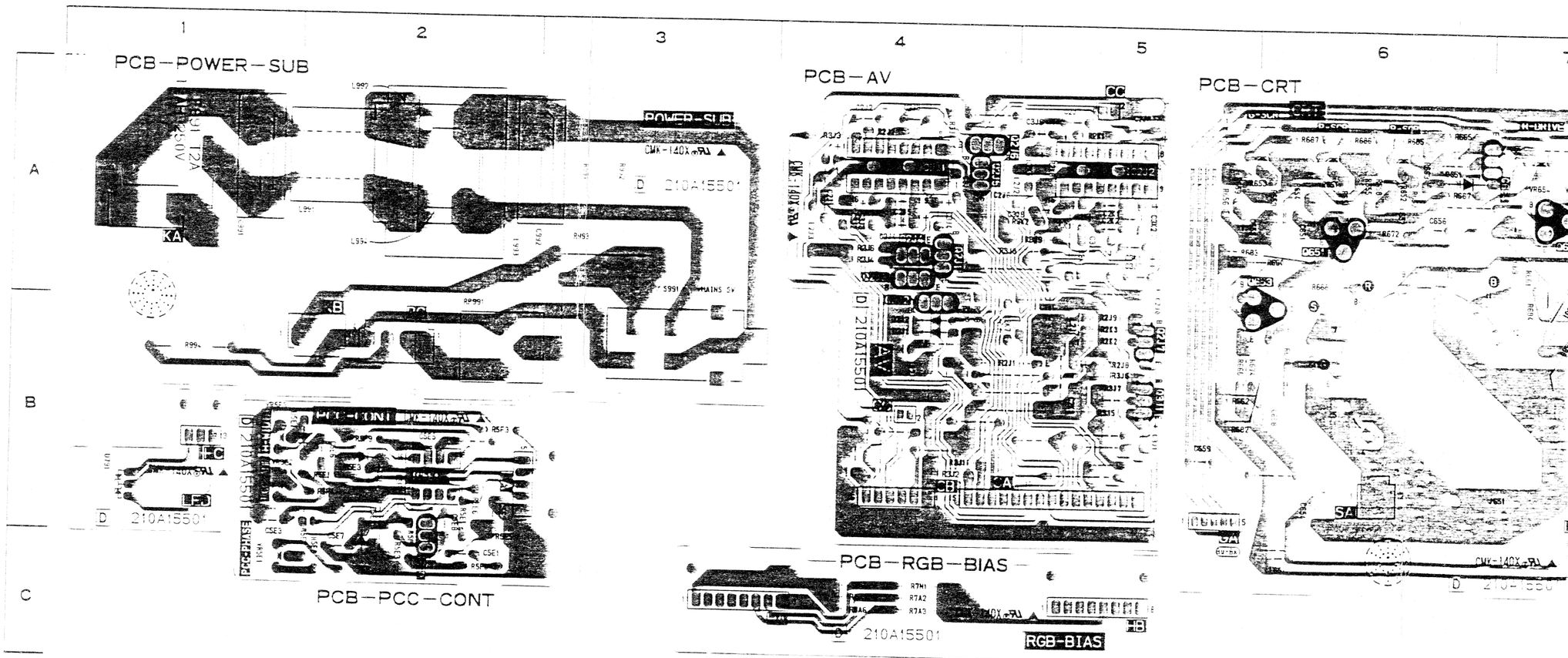
SYMBOL NO.	ADDRESS
CF111	B – 4
CF112	B – 4
CF301	B – 5
CF302	B – 5
D101	B – 5
D102	B – 5
D150	A – 6
D151	A – 6
D152	A – 6
D153	A – 6
D154	B – 6
D155	A – 6
D231	A – 8
D232	A – 8
D232	C – 7
D233	C – 7
D235	A – 8
D236	B – 7
D251	B – 7
D252	B – 7
D253	B – 7
D254	B – 6
D255	B – 6
D257	C – 5
D280	C – 4
D281	C – 4
D282	B – 4
D301	B – 5
D302	B – 5
D451	C – 6
D452	C – 6
D453	C – 5
D531	A – 4
D551	D – 5
D552	D – 5
D553	D – 6
D554	D – 6
D555	E – 6
D556	D – 7
D557	C – 4
D558	D – 6
D559	C – 4
D560	D – 6
D601	B – 4
D701	B – 2
D702	B – 2
D703	B – 2
D704	B – 2
D705	B – 2
D706	A – 3
D710	B – 3
D711	B – 3
D712	C – 3
D714	A – 2
D715	A – 3
D716	A – 2
D717	E – 1
D901	E – 2
D902	E – 2

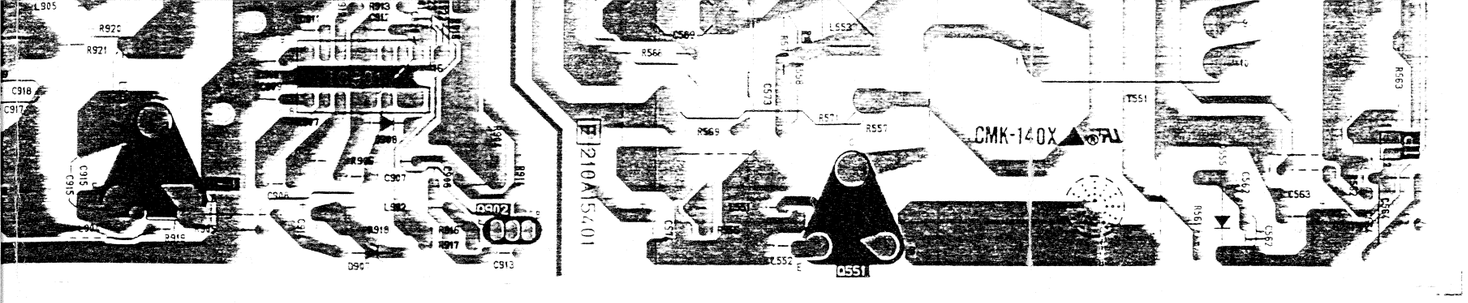
SYMBOL NO.	ADDRESS
D903	E – 2
D904	E – 2
D905	D – 4
D906	D – 3
D907	E – 4
D908	E – 4
D909	E – 2
D951	C – 3
D952	C – 3
D954	C – 2
D955	D – 4
D956	C – 2
D957	C – 3
D958	C – 2
D958	C – 3
IC101	B – 5
IC150	A – 6
IC251	C – 5
IC361	A – 2
IC451	C – 5
IC601	B – 4
IC631	A – 3
IC701	B – 2
IC702	A – 3
IC703	B – 3
IC901	E – 4
IC951	C – 2
IC952	C – 2
IC954	C – 2
IC955	C – 3
L101	A – 5
L102	A – 5
L103	A – 5
L104	B – 5
L105	A – 5
L111	B – 5
L112	B – 4
L201	B – 6
L201	C – 4
L301	B – 5
L331	B – 7
L332	B – 7
L333	B – 7
L334	D – 7
L335	D – 7
L336	C – 7
L337	C – 7
L361	B – 1
L362	B – 1
L363	B – 1
L451	C – 5
L531	A – 3
L551	E – 5
L552	E – 5
L553	E – 5
L554	D – 4
L555	D – 4
L556	D – 5

SYMBOL NO.	ADDRESS
L701	B – 2
L702	B – 2
L703	B – 2
L704	C – 2
L705	C – 3
L901	E – 4
L902	E – 4
L903	E – 3
L904	E – 3
L905	E – 3
L951	C – 4
L952	C – 2
PC951	D – 4
Q101	A – 5
Q102	B – 5
Q103	B – 6
Q105	B – 6
Q111	B – 4
Q130	C – 5
Q150	A – 7
Q231	B – 6
Q251	A – 6
Q252	B – 6
Q253	B – 3
Q301	B – 5
Q302	B – 6
Q331	A – 6
Q332	B – 6
Q361	A – 2
Q361	A – 2
Q362	A – 3
Q363	A – 2
Q431	A – 5
Q551	E – 5
Q552	D – 5
Q701	B – 3
Q702	B – 1
Q703	A – 1
Q704	A – 1
Q705	A – 1
Q706	E – 1
Q707	A – 2
Q708	A – 2
Q709	B – 2
Q710	B – 2
Q901	E – 3
Q902	E – 4
Q953	D – 4
S451	C – 6
S701	B – 1
S702	C – 1
S703	C – 1
S704	D – 1
S705	D – 1
S706	D – 1
SF101	A – 5

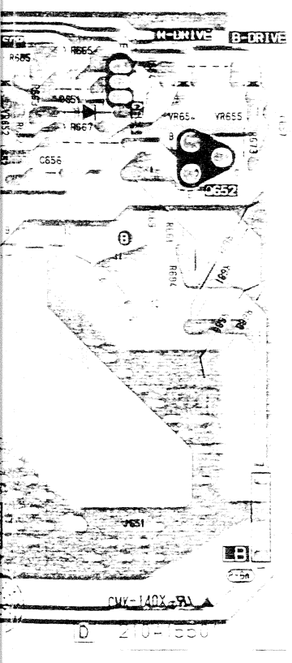
SYMBOL NO.	ADDRESS
SF102	A – 5
T551	E – 6
T552	C – 4
T901	D – 3
TH531	A – 4
TP11	A – 5
TP12	B – 4
TP14	B – 5
TP15	A – 6
TP1A	A – 5
TP1C	A – 5
TP1F	B – 5
TP1G	B – 5
TP1M	A – 8
TP9A	D – 4
TP9B	D – 4
TU101	A – 6
VC101	B – 5
VR101	B – 5
VR201	D – 7
VR451	C – 6
VR452	C – 6
VR531	A – 5
VR951	D – 4
X601	A – 4
X602	A – 4
X701	A – 2
Z551	D – 6
Z701	E – 1
Z951	C – 3
Z953	D – 3


E
D706
C901
C916
R921
C917
C902

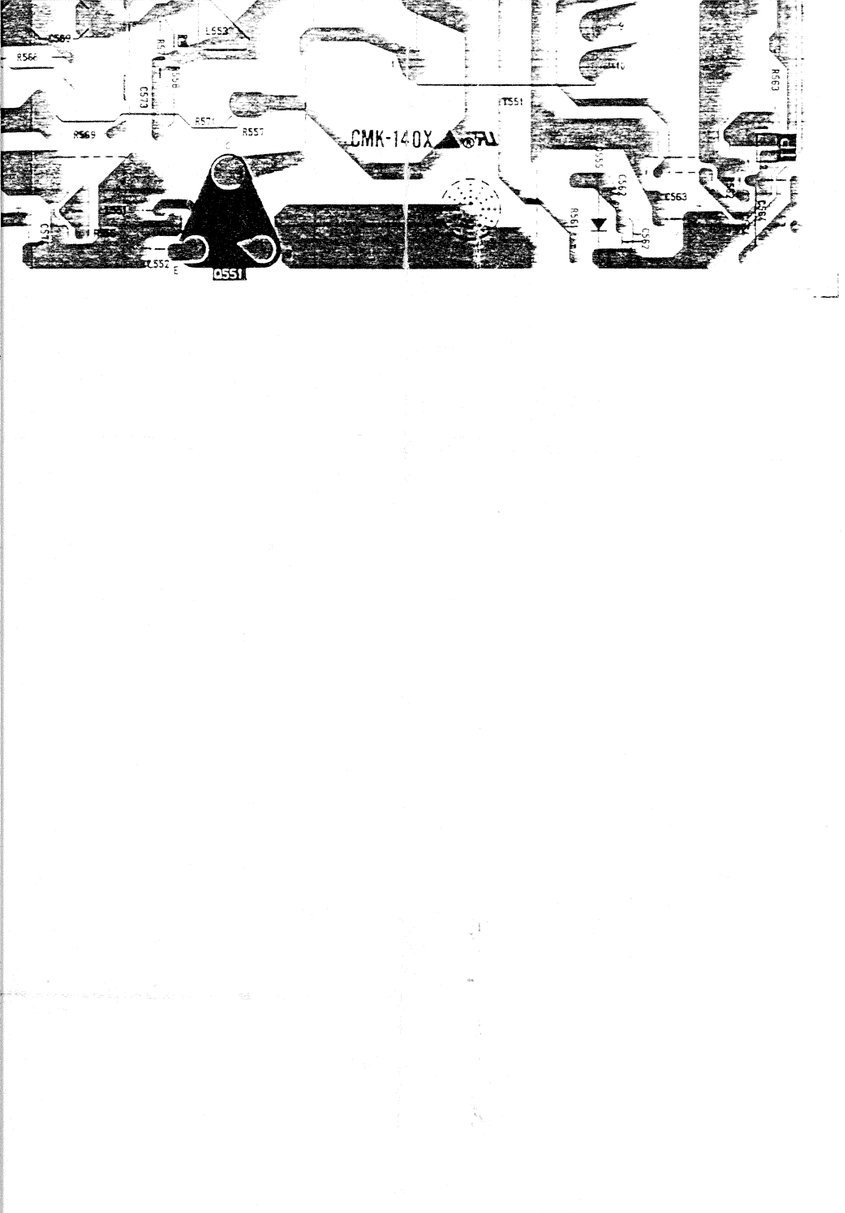

1
2
3
4
5
6
7
A
B
C
PCB—POWER—SUB
POWER-SUB
CMX-140X-PW
D 210A15501
KA
KB
KC
PCB—PCC—CONT
PCC-CONT
PCB—AV
CC
AV
CA
CB
PCB—RGB—BIAS
RGB-BIAS
PCB—CRT
CRT
SA
SB



D704	B – 2	L337	C – 7	Q902	E – 4
D705	B – 2	L361	B – 1	Q953	D – 4
D706	A – 3	L362	B – 1		
D710	B – 3	L363	B – 1	S451	C – 6
D711	B – 3	L451	C – 5	S701	B – 1
D712	C – 3	L531	A – 3	S702	C – 1
D714	A – 2	L551	E – 5	S703	C – 1
D715	A – 3	L552	E – 5	S704	D – 1
D716	A – 2	L553	E – 5	S705	D – 1
D717	E – 1	L554	D – 4	S706	D – 1
D901	E – 2	L555	D – 4		
D902	E – 2	L556	D – 5	SF101	A – 5



SYMBOL NO.	ADDRESS
D2J1	B – 4
D2J2	B – 4
D5E1	B – 1
D5E2	B – 2
D5E3	B – 2
D651	A – 6
D791	B – 1
F991	A – 1
IC2J1	A – 4
IC2J2	A – 5
L2J1	B – 5
L2J2	A – 4
L2J3	A – 4
L651	C – 6
L991	A – 2
L992	A – 2
L993	A – 2
L994	A – 2
Q2J1	A – 4
Q2J2	A – 4
Q2J3	A – 4
Q2J4	A – 4
Q2J5	A – 4
Q2J6	A – 4
Q2J7	B – 5
Q3J1	B – 5
Q5E1	C – 2
Q651	A – 6
Q652	A – 7
Q653	A – 6
Q654	A – 7
S991	A – 3
VR5E1	C – 1
VR5E2	B – 1
VR5E3	B – 1
VR651	A – 6
VR652	A – 6
VR653	A – 6
VR654	A – 7
VR655	A – 7



D704	B – 2	L337	C – 7	Q902	E – 4		
D705	B – 2	L361	B – 1	Q953	D – 4		
D706	A – 3	L362	B – 1				
D710	B – 3	L363	B – 1	S451	C – 6		
D711	B – 3	L451	C – 5	S701	B – 1		
D712	C – 3	L531	A – 3	S702	C – 1		
D714	A – 2	L551	E – 5	S703	C – 1		
D715	A – 3	L552	E – 5	S704	D – 1		
D716	A – 2	L553	E – 5	S705	D – 1		
D717	E – 1	L554	D – 4	S706	D – 1		
D901	E – 2	L555	D – 4				
D902	E – 2	L556	D – 5	SF101	A – 5		